Dmitry Boltenkov, Aleksey Gayday,
Anton Karnaukhov, Anton Lavrov, Vyacheslav Tseluiko

Russia's New Army

Edited by Mikhail Barabanov
Foreword by David Glantz

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This collection of essays analyses the ongoing radical reform of the Russian armed forces and their transition to the “New Look” model, which was launched in 2008.

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Contents

List of Abbreviations

AEW&C – Airborne Early Warning & Control
APC – Armored Personnel Carrier
BKhRVT – Arms Storage and Repair Depot
BKhVT – Arms and Equipment Storage Depot
BTG – Battalion-size Tactical Group
CRD – Central Reserve Depot
CRDF – Collective Rapid Deployment Force
CRRF – Collective Rapid Reaction Force
CSTO – Collective Security Treaty Organization
HQ – Headquarters
ICBM – Intercontinental Ballistic Missile
IFV – Infantry Fighting Vehicle
FEMD – Far East Military District
JSC – Joint Strategic Command
MD – Military District
MoD – Ministry of Defence
MRAP – Mine Resistant Ambush Protected
MTA – Military Transport Aviation
NBC – Nuclear, Biological and Chemical warfare
NCMD – North Caucasus Military District
PAK FA – Russian stealth fifth generation fighter
R&D – Research and Development
SAM – Surface-to-air Missile
SLBM – Sea-launched Ballistic Missile
SMD – Siberian Military District
UAV – Unmanned Aerial Vehicle
USD – Universal Supply Depot
VDV – Airborne Troops
VUMD – Volga–Urals Military District

Foreword

The matter of reforming a country's military establishment, like reform of any type, is inherently as controversial as it is necessary. The goal of military reform is to alter a country's armed forces so that they can better perform their traditional function of protecting and defending both it and its people. The perception itself that reform is necessary implies widespread belief, in particular on the part of the government, that fundamental problems in the armed forces as presently configured prevent them from performing those traditional functions to a satisfactory degree. Therefore, military reform requires changes, often fundamental and wholesale in nature, in the country's armed forces. Since changing a complex organization of long standing also means overcoming institutional resistance within the organization, military reform is as difficult to carry out as it is necessary and controversial.

Historically, because the motive force for reform is problems, real or perceived, military reform in the Russian Federation, as well as in its imperial and Soviet antecedents, took place either in the wake of stinging military defeats or in response to the altered nature and configuration of the State or the geopolitical conditions in which it existed. In Imperial Russia, for example, the famous Miliutin and Stolypin reforms occurred largely in reaction to the

performance (or lack thereof) of Russia's Armed Forces' in the Crimean and Russo-Japanese Wars. Similarly, during the 1920s and 1930s, the Frunze and Tukhachevsky reforms responded to the perceived security needs of the fledgling Soviet State, first, after the Russian Civil War and, later still, after the rise of German Nazism. Again, as Europe was being engulfed in a Second World War, the Timoshenko reforms sought to create a Soviet military establishment able to contend with the requirements of global war and fight the Armed Forces of Hitler's Germany. Then, after the Soviet Union was itself engulfed by war in June 1941, first, simple survival and, later, the necessity for total victory, provided the necessary impetus for wholesale military reforms in the incredibly difficult circumstances of numerous defeats and total war.

Nor did victory in the Second World War negate the necessity for subsequent periodic military reform. Faced with the "double-barreled" challenges of rapid technological changes (most important, the advent of atomic and nuclear weapons) and constantly evolving global political relationships of the Cold War world, the Soviet Union implemented the Zhukov reforms of the mid-1950s, reforms associated with Khrushchev's nuclear "Revolution in Military Affairs" of the early 1960s, and the Ogarkov reforms of the late 1970s and early 1980s. Last but not least, the fundamental changes associated with the demise of the Soviet Union and emergence of the Russian Federation in 1991 once again necessitated "root and branch" reform of the Russian Federation's Armed Forces. In this instance, however, economic, political, and social realities inhibited effective reform for nearly 20 years. As a result, after numerous attempts at military reform, which were only partially successful, only today do prospects for successful reform seem more favorable.

As history indicates, while always difficult to implement, military reform may succeed, fail, or merely provide temporary respite to long-standing and persistent problems. Regardless of outcome, however, the success or failure of reform depends largely on a thorough understanding of both the problems involved and the remedies posited to resolve them.

This short book, or more properly, anthology of essays on specific military topics, provides context as well as a useful "blueprint" for on-going and future Russian military reforms. In regard to context, it begins by describing the circumstances that gave rise to the need for military reform, specifically, the altered form and nature of the Russian Federation after 1991. While clearly defining the most fundamental problems (specifically, five in number) the Russian State has faced as it attempted to construct a military establishment suited to meet its security needs, it explains how, one by one, successive Russian ministers of defence have attempted to resolve these problems. This involves careful examination of all developments but, in particular, wars, which have provided both context and a "testing ground" for the effectiveness of those reforms.

Structurally, the book consists of five chapters, four of which address military reform experiences in the Russian Army, Airborne Troops, the Air Force, and the Navy since 1992. The fifth, and in my opinion the most important, focuses on Russian military doctrine and the current state of its Armed Forces. The first four chapters survey developments in each of the major branches [services] of the Russian Armed Forces in detail, being careful to highlight the unique characteristics of each branch [service] and the historical and contemporary role each has performed and will likely perform in the future. The final chapter, which addresses Russian military doctrine, provides the essential "glue", which holds the entire book together. It correctly concludes that, by definition and tradition, the military doctrine of the Russian Federation, meaning the place and role of the Armed Forces in guaranteeing the security of the Russian State, provides the only valid basis for structuring and reforming the Russian Armed Forces. This, it asserts, has yet to be done. Instead, as presently articulated, military doctrine often contradicts the nature and structure of various elements of the Armed Forces. Thus, if military reform is to succeed, one of the foremost tasks is to ensure these reform measures conform to accepted and well-defined military doctrine.

To avoid stealing the book's "thunder" further, I simply recommend that any and all who are interested in the Russian military, Russian military doctrine, or Russian military security in general, carefully read this book and include a copy in their library. In short, this slender volume is the soundest, most objective, and most perceptive study yet to appear on this most important of topics.

David M. Glantz
Carlisle, Pennsylvania, USA

Reform of the Russian Army

Aleksey Gayday

The Russian Armed Forces have undergone several rounds of reform since their official creation date 18 years ago on May 7, 1992. The reforms were aimed at improving the fighting ability of the armed forces and making them more fit for the task of protecting and defending the Russian Federation. The arrival of every successive defense minister has signaled a new round of reforms. The current minister, Anatoliy Serdyukov, appointed on February 15, 2007, is no exception. But the reform that was devised and is now being implemented under his leadership is probably more radical and ambitions than any of the previous ones. It aims to reshape the Russian Armed Forces into what has become known as the "New Look" model.

The latest reform has attracted unprecedented public attention. Its progress has become the subject of lively debate involving political parties, senior government officials, MoD representatives, NGOs and the general public. The transition towards the "New Look" model has also attracted a lot of media coverage. The assessments vary. Some commentators are extremely critical, saying that the "New Look" reform has completely destroyed the Russian Armed Forces and undermined the country's ability to defend itself. Others are fully supportive and

believe the reform was something of a stroke of genius. It is still hard to say what the final verdict of public opinion will be. Everyone agrees, however, that the "New Look" reform has been the most radical transformation of the entire Russian Armed Forces since the break-up of the Soviet Union. That is beyond any doubt. There have been serious changes in the organizational and personnel structure of all the military units and formations. The procurement, logistical, financial, medical and other services of the Russian army have also been reshaped. The mobilization system has been completely overhauled, for the first time in 18 years. The recruitment system has also been reformed, and so on.

The ideas underlying the latest round of the Russian military reform were not born overnight. The ongoing transformations build upon all the reforms undertaken since 1992, and the "New Look" of the Russian Armed Forces is an attempt to overcome all the difficulties and problems that the previous reforms had run into.

Russian Army under Minister Pavel Grachev

The first detailed proposals for reforming the Russian Armed Forces were drawn up immediately after those forces were created as an independent structure. The process of dividing the Soviet Army and Navy between the newly independent republics after the collapse of the former Soviet Union had lasted for about three years. As a result, Russia essentially had to build its entire military system from scratch. On May 18, 1992 President Yeltsin appointed Army General Pavel Grachev as Defense Minister. Gen. Grachev oversaw the drafting of the plans for the first round of Russia's military reforms, which began in early 1993. There is a widely held opinion that all those reforms boiled down to reducing the size of the Russian army, but that is not so. The task facing the MoD and the minister was very complex. Public opinion was in favor of cutting the armed forces, and so was the Russian leadership. The country was in a deep economic crisis, and defense spending had to be cut.[1] A large part of the defense budget was spent on the rapid pullout of the former Soviet Union's troops from Eastern Europe and some of the former Soviet republics. The MoD, meanwhile, was facing several difficult problems which the Russian Armed Forces had inherited from the Soviet army.

- **Problem No 1** was the cumbersome mobilization system. It was designed for a large-scale war with the NATO countries in Europe and with China in the Far East and the Trans-Baikal region. The system's main goal was to mobilize up to 5m people on a very tight schedule during the threat period.
- **Problem No 2** was that none of the units and formations of the Russian Armed Forces were being kept at their full nominal strength. All of them needed additional personnel to be brought in, one way or another, in the

event of war. The bulk of the Army was made up of reduced-strength formations (manned to 50 per cent of their full strength) and skeleton-strength formations (10-20 per cent). Those units relied on mobilization to bring them to their full wartime strength. In 1991 the Soviet Army had 32 tank divisions and 100 motorized rifle divisions.[2] Of those 132 divisions, only 20 were kept at about 70 per cent of their full strength in terms of personnel and equipment. The rest were reduced or skeleton-strength formations.[3]

- **Problem No 3** was that due to the complexity of the mobilization structure, the entire military command system was geared towards implementing mobilization plans rather than actually commanding the troops. In the 1980s the Soviet Union had 16 military districts and four groups of forces stationed abroad. There were also Soviet troops in Mongolia (the 39th Army) and in Afghanistan (the 40th Army), which were subordinated to the homeland military districts.[4] The General Staff commanded military districts in peacetime, and fronts during wartime. The chain of command then went down from military districts (fronts) to the respective armies, then on to army corps, and further down to the actual military units and formations. With 70 to 80 per cent of the units and formations manned at reduced or skeleton strength levels, the entire command system was very top-heavy.
- **Problem No 4** was huge variations in the tables of equipment used across the armed forces. That was largely because the Soviet defense industry produced many duplicate types of weaponry. To illustrate, the Soviet Army simultaneously operated three main battle tanks (T-80, T-72 and T-64)[5] of the same generation. They all had different guns, engines, and fire-control systems, although their performance specifications were very similar. The situation with armored personnel carriers and infantry fighting vehicles was the same. The Russian Armed Forces had also inherited large numbers of obsolete Soviet weaponry (such as the T-10M, T-62, T-55 and T-54 tanks, field artillery pieces designed back in the 1930s and 1940s, etc.) Even the huge Soviet defense industry could not produce enough modern hardware to equip all the units of the vast Soviet army with the latest weaponry. As a result, a lot of obsolete equipment was kept in service rather than being decommissioned.
- **Problem No 5**. Due to the huge size of the arsenals and heavy reliance on mobilization, the Soviet army had to keep much of its hardware and supplies in storage. In wartime the army depots were to release that hardware and supplies to equip the army units and formations being brought to their full strength as part of the mobilization plans, and to replenish any combat losses. In peacetime all those supplies needed to be stored and refreshed from time to time, while the equipment needed to be kept in good working order. That

required a lot of manpower, so out of the 3.4 million people who served in the Soviet army in 1991, almost 1.2 million manned the army depots.

The Russian Defense Ministry aimed to resolve all these difficult problems during the transformation of the Soviet armed forces into the Russian ones. It was clear right from the start that resolving them all at the same time would not be possible. In their early reform proposals the MoD and the General Staff proposed the creation of the so-called Mobile Forces. Those would consist of several independent motorized rifle brigades manned and equipped at wartime strength levels (i.e. 95-100 per cent of their full strength). All those brigades were also supposed to be identical in terms of their personnel numbers and specific types of equipment. It was an experiment aimed at trying out a standard new table of organization and equipment before rolling it out across the rest of the Army.[6] That way the MoD and the General Staff were hoping to address the lack of standardization in terms of personnel and equipment, and, most importantly, get rid of the reduced and skeleton-strength units. That would enable the MoD to abandon the cumbersome mobilization system. The plan was for a gradual transition from a conscript army to a mixed force consisting of conscripts and professional soldiers serving under contract, and eventually to a purely professional force.

But those ambitions plans fell foul of the economic and political situation in the country at the time. Instead of the proposed five independent motorized rifle brigades for the Mobile Forces, the go-ahead was given for only three. By late 1993, the Russian Armed Forces had the 74th Independent Motorized rifle brigade based in Yurga[7], the 131st (Maykop)[8], the 135th (Prokhladnyy)[9] and the 136th (Buynaksk).[10] The funding allocated for the creation of the Mobile Forces was enough to implement less than half of what was planned. For example, the transition to a standard personnel and equipment table across the brigades was never completed – there were major differences even between individual battalions within the same brigade.

In 1993 the Russian government ordered a reduction in the number of conscripts being drafted by 35 per cent. But calculations by the Main Organization and Mobilization Department of the General Staff indicated that as a result of that reduction, there would not be enough conscripts to bring even the newly created brigades to their full strength, let alone the rest of the Army units. The MoD was therefore forced to retain its old mobilization system. Even in the new brigades some of the units and formations were kept at reduced or skeleton-strength levels.

On December 11, 1994, Russia began the operation to restore constitutional order in the Chechen Republic, known as the First Chechen Campaign. The ensuring events received generous coverage in the media and drew a lot of public

attention, eventually leading to a political crisis in Russia, in which Defense Minister Pavel Grachev lost his job.

During the planning of the operation to send troops to Chechnya, Grachev asked the prime minister's office and President Yeltsin personally to announce a limited mobilization, so as to bring the units involved in the Chechen operation to their full strength. His proposal was rejected out of hand. No wonder then that the troops sent to Chechnya had to be cobbled together by the MoD and the General Staff from all across Russia. The MoD even had to resort to using the personnel manning the arms depots. The system of command used for the troops in Chechnya also demonstrated its numerous shortcomings. The command system of the Russian Armed Forces in general was far too cumbersome; it was designed primarily for mobilizing and then commanding a 10-million-strong force. The General Staff would send its orders and directives to the HQ of the North Caucasus Military District; from there the orders were passed on to the HQ of the 58th Army, and only then to the HQ of the Combined Force in Chechnya. The absurdness of that system was that the HQs of the North Caucasus Military District and of the 58th Army were not actually in command of the operation. They served as mere relay stages for orders and information flowing between the HQ of the Combined Force in Chechnya and the General Staff/MoD.

Russian Army under Igor Rodionov and Igor Sergeev

The First Chechen Campaign officially ended on August 31, 1996, after Pavel Grachev was replaced by Col. Gen. Igor Rodionov (who was promoted to Army General on October 5, 1996). After the unexpectedly heavy losses in Chechnya and the entirely unsatisfactory Khasavyurt peace deal[11], the Russian Armed Forces came under scathing criticism from all quarters. The new defense minister was facing a very difficult task. He needed to kick-start real reforms in the Russian army, and to address all the shortcomings and failings laid bare by the war in Chechnya. The first proposal Gen. Rodionov made was to always to keep at least some of the units at their full strength, and to equip them using standard weaponry. The government agreed with that proposal by the MoD and even promised to allocate funds for its implementation.

The transition of the Russian Armed Forces to the new personnel and equipment tables was completed under Rodionov's successor Igor Sergeev, Russia's first and so far its only Marshal (promoted to that rank in 1997). The transition plan was actually very modest. It was decided that every division should have one regiment manned and equipped at full wartime strength. Several entire motorized rifle divisions, a number of combat support units, and all the divisions and brigades of the Airborne Troops were to be brought to their full strength as well. Some of the reduced and skeleton-strength units and

formations were disbanded, and their personnel used to bring the "permanent combat readiness" units to their full strength. Other skeleton-strength units became the core of the new Arms and Equipment Storage Depots (BKhVT); their personnel numbers were reduced even further. The MoD also set up several Central Reserve Depots (CRD), each specializing in a particular types of arms and equipment, such as tanks, artillery, engineering and communications equipment, NBC, etc.[12]

But all those reforms failed to resolve the most intractable problems of the Russian Armed Forces. The mobilization system still remained largely unchanged. The command chain (General Staff-Military District-Army-Division or Brigade) was also left as it had been for decades. Army corps commands were disbanded in 1998 (except for the 67th Army Corps of the North Caucasus Military District, which survived until 2001, and the 68th Army Corps of the Far East Military District on Sakhalin, which was disbanded on December 1, 2006). And although the Russian Armed Forces now had fully manned and equipped formations, the bulk of the units were still being kept at reduced or skeleton-strength levels; some were stripped down of personnel to become BKhVTs. The Russian army still operated a large number of depots storing various hardware and supplies, and requiring a lot of personnel to maintain them.

The transition to the new personnel and equipment tables had been completed by 1998. As a result, the Russian Army now consisted of the following types of units and formations:

- Permanent combat readiness units, manned to 95-100 per cent of their wartime strength;
- Reduced-strength units (Types A and B) manned to 70 per cent of their wartime strength;
- Arms and Equipment Storage Depots, manned to 5-10 per cent of their wartime strength;
- Skeleton strength formations, manned to 5-10 per cent of their wartime strength.

After several rounds of cuts and reorganizations, the size and structure of the Russian Army had stabilized in 1997-1999 and remained relatively unchanged for almost a decade, until the beginning of the latest round of reforms in 2008.

Plans for a transition from a conscription-based army to a fully professional force also remained hanging in the air. Public opinion was strongly in favor of abolishing conscription, especially after the heavy losses among the conscripts during the First Chechen Campaign. But all the country's economy could afford was a slight increase in the numbers of professional soldiers serving under contract.

The first real test of the reforms implemented under ministers Rodionov and then Sergeev came during the second war in Chechnya, which broke out after militants invaded Dagestan on August 7, 1999. The federal forces first crushed the armed rebels in Dagestan, and then on September 30, 1999 entered Chechnya itself. Over the period from August 7 to September 30 the MoD had assembled a strong force on the territory of Dagestan, Stavropol Territory and North Ossetia. In terms of its numbers and composition it was stronger than the attacking Russian force assembled in 1994. The core of it was made of permanent combat readiness formations, as well as units of the Airborne Troops. But Defense Minister I. Sergeev and the chief of the General Staff, Army General A. Kvashnin, had decided that the new permanent-readiness brigades and divisions should send only one battalion-size tactical group each to the force assembled for the new operation in Chechnya. Those tactical groups were made of motorized rifle battalions reinforced by tanks, artillery and engineers. The only exception was the 74th Independent Motorized Rifle Brigade of the Siberian Military District, which brought all of its strength (3,500 troops) to the Second Chechen Campaign.[13] The idea behind sending only one battalion-strength tactical group from each of the permanent-readiness formations was that the remaining strength of those formations would stay at their permanent bases and be used to replenish the combat losses of the units fighting in Chechnya. Just as during the First Chechen Campaign, the government had decided against announcing mobilization. The prime minister's office, the MoD and the General Staff believed that this time around, the troops and equipment already available to them should suffice. The then prime minister, Vladimir Putin, said in an interview that the force sent to fight in Chechnya had to be assembled from all across the Russian Armed Forces. That claim is not entirely accurate. In 1998 the strength of the Russian Armed Forces was 1.212 million servicemen, including 360,000 people in the Army. Out of those 360,000, about 100,000 were serving with the permanent-readiness units. Another 35,000 were serving with the Airborne Troops.[14] Only about 35,000 servicemen, including soldiers of the Airborne Troops, were involved in the first stage of the operation that began in 1999, so the situation was not quite as desperate.

As the operation unfolded, the number of personnel involved in it was brought up to 90,000 people (as of May 1, 2003). The losses sustained by the units fighting in Chechnya were replenished from their home bases. But the system did not work very well, so some of the reinforcements had to be drawn from reduced-strength formations, BKhVTs, CSDs and skeleton-strength units.

Starting from late 1999 the MoD began to replace the conscripts in the units fighting in Chechnya with professional soldiers. The Russian leadership simply did not have any other choice. No-one wanted a repeat of the events

of 1994. According to official MoD statistics as of June 1, 2003, some 45 per cent of the combined force fighting in Chechnya was made up of professional soldiers serving under contract.

The results of the Second Chechen Campaign suggested that the Russian Armed Forces had benefitted from the reforms that had been implemented since the first campaign. But a new difficulty arose. The system of keeping the units fighting in Chechnya at their full strength by drawing reinforcements from other units had turned out to be problematic. It had led to the weakening of the units that supplied the replenishments. To illustrate, the soldiers sent to keep the 140th Guard Tank Regiment fighting in Chechnya at its full strength had originated not only from the 5th Guard Tank Division, to which the regiment belonged, but also from the 131st Motorized Rifle Division stationed nearby, and from other formations of the Siberian Military District's 36th Army. The situation was the same across all the other units involved in the counter-terrorism operation. According to official MoD statistics, one Army officer in every three had taken part in the combat operations in Chechnya between 1998 and 2003, when the active phase of the campaign ended. There was therefore a clear need to create a standing reserve component in the Russian Armed Forces, an equivalent of the National Guard and of the Reserve in the U.S. armed forces.

The partial transition from conscription to professional service in some units also revealed another problem. More than 85 per cent of the servicemen who had signed the contract needed to be retrained for a new military specialty before they could join their new units, because prior to signing up they had different military specialties in their home units. Indeed, some had even served with a different type of troops or a different armed service. For example, on August 11, 2000 some 153 servicemen signed a contract to serve with the 245th Motorized Rifle Regiment of the 3rd Motorized Rifle Division. Only 13 had previously served in the Army; the rest had been with the Navy, the Air Force or even the Strategic Missile Troops. No wonder then that all of the remaining 140 soldiers who had signed the contract needed to be retrained.

Russian Army under Sergey Ivanov

Sergey Ivanov was appointed defense minister on March 28, 2001. He became Russia's first civilian defense minister in a very long time. In 2003, immediately upon completion of the active phase of the operation in Chechnya, the MoD and the General Staff proposed a new plan for the reform of the Russian Armed Forces. The plan aimed to address the problems revealed during the campaign in Chechnya.

The essence of the reform echoed the proposals made back in 1993 under Gen. Grachev. The idea was to replace all the remaining conscripts in the permanent-readiness units with professional soldiers. The rest of the units,

as well as the arms storage depots, central reserve depots and other military facilities, would still be manned mostly by conscripts. But the mobilization system remained unchanged. Neither did the plan answer the question of what to do with the numerous depots or the obsolete weaponry mothballed at the BKhVTs and CRDs. For example, the BKhVT at Abakan, which was supposed to field a motor rifle division in the event of war, stored obsolete anti-aircraft artillery (57 mm S-60 towed AA guns) rather than SAM systems, because under the existing wartime plans that motorized rifle division was still supposed to have an AA artillery regiment.[15]

In 2003 the Russian government gave the go-ahead for the implementation of the federal program called "Transition of permanent-readiness units to professional service".[16] The experiment involved an airborne regiment of the 76th Guard Airborne Division based in Pskov. It continued until 2005, and revealed a large number of problems that made service under contract in the regiment a rather unattractive proposal. Despite the mixed results the experiment had produced, it was deemed a success, and in 2005 the MoD began the transition of other units and formations to fully professional service.

In 2005 the chief of the General Staff, Army General Y. Baluyevskiy, initiated a new plan to restructure the military command system. The general's idea was to make the system simpler, and also to create command structures that would give orders to units and formations of all the types of troops and armed services. Essentially he proposed the creation of three regional commands.

The Western Command was to subsume the Moscow and Leningrad Military Districts, the Baltic and Northern Fleets, and the Special Air Force and Air Defense Command (i.e. the former Moscow Air Force and Air Defense District). The Southern Command was to subsume the North Caucasus Military District, a small part of the Volga-Urals Military District, and the Caspian Military Flotilla. The Eastern Regional Command was to be the biggest one, after taking over the Far Eastern, Siberian and the larger part of the Volga-Urals Military Districts, plus the Pacific Fleet. The regional commands were also to be put in charge of the centrally-commanded formations, such as artillery and engineers, air force and air defense units, communications and other types of troops, including Airborne Troops, stationed on their respective territories. The individual central commands for the armed services were to be abolished. But all the available financing was being ploughed into replacing conscripts with professional soldiers when the proposals were made; the respective federal program was already falling behind schedule. It was therefore decided to postpone the creation of the regional commands.

In 2005-2006 the program to phase out conscription came to the brink of collapse. Suffice to say that many units had lost almost all of their previously hired professional soldiers over a 12-month period. For example, the 382nd

Motorized Rifle Regiment of the Siberian Military District's 122nd Motorized Rifle Division signed contracts with 2,700 servicemen in 2006. Out of that number, almost 2,300 – enough to man an entire regiment – soon left. The reason for such a failure was that a number of circumstances were not taken into account when the budgeting for the federal program was done. The money made available for it was spent on building the hostels, canteens, and other facilities for the soldiers serving under contract. But there was no money left to build schools, nurseries and shops for those soldiers' families. Amid the rapid growth in the living standards in Russia that began in 2003, the salaries offered to the professional soldiers suddenly became much less competitive. But the MoD failed to adjust its plans to reflect the changing situation. Instead, for the sake of appearances it ordered the commanders of the units and formations involved in the program just to say no to all the professional soldiers who wished to leave service. It focused on bringing the units involved in the program to 95-100 per cent of their full numerical wartime strength, to the exclusion of all else. But even that very limited undertaking failed. In 2005-2007 more than 50 per cent of Russia's military spending was being channeled into the program – but the target of bringing all the units involved to 95-100 per cent of their full strength was not met. For example, the North Caucasus Military District's 42nd Guard Motorized Rifle Division, stationed in Chechnya, was at 102 per cent of its nominal numerical strength as of January 1, 2008. But the 205th Independent Motorized Rifle Brigade stationed in neighboring Budennovsk had only 85 per cent of the positions filled.

The failure of the federal program to replace conscripts with professional soldiers also affected the plans to create regional commands. In May 2006 the MoD adopted a final decision to postpone the creation of the regional commands until 2010-2015.

Planning and launch of radical reform of the Army and the rest of the Armed Forces under Minister Anatoliy Serdyukov

On February 15, 2007 the Russian president signed Decree No 177 appointing Anatoliy Serdyukov the new defense minister. The Russian Armed Forces were in a difficult situation at the time. On the one hand, non-stop reforms since 1992 had already brought some tangible results. But not a single one of those reforms had been brought to its logical conclusion. All the key problems inherited from the Soviet army remained unresolved. Indeed, new ones had appeared, such as the headache with the program to fully replace conscripts with professional soldiers in some units.

Something had to be done. Radical measures were required. The first drafts of the proposed reforms were drawn up in December 2007. But for a number of reasons, those plans were kept under wraps. The General Staff and the MoD

continued to work on the details, without submitting the proposals to the prime minister's office or the president. The essence of the plans was to resurrect the idea of "Mobile Forces", but on a much grander scale. The proposal was to omit the limited rollout stage, and to transition the entire Army to a brigade structure all in one go. The proponents of the reform argued that more than enough experience had been accumulated over the previous 18 years, and that the optimized new personnel and equipment tables for the units and formations had already been drawn up. They also wanted to abolish divisions (i.e. motorized-rifle, tank or airborne divisions) and other combined formations.

In December 2007 the go-ahead was given for the creation of one of the proposed regional commands. The Eastern Regional Command was chosen for the pilot. Formally the command had existed since June 1, 2006, and the personnel table of Command No 2/670 had been approved by the chief of the General Staff on October 22, 2005. The core of the new Command was made of the disbanded 29th Army of the Siberian Military District. But up until December 2007 the Command existed only on paper and was not involved in planning or routine operations. In January 2008 the Eastern Regional Command was brought up to its full numerical strength. Col. Gen. Nikolay Tkachev was appointed as its chief, and Lt. Gen. Aleksandr Novikov as his first deputy.[17] In March-April 2008 the MoD held a joint command staff exercise involving units and formations of the Siberian and Far Eastern Military Districts. The event showed that, contrary to expectations, the Regional Command was ineffective in the existing command-and-control system, and only created additional problems. One way or another, the Regional Command had to give orders to the HQs and district commands of the Military Districts, rather than the units and formations directly. The hope was for a universal command-and-control system that would combine all the units of the various types of troops and armed services. Instead, the Regional Command became yet another layer between the General Staff and the Military District commands. The Eastern Regional Command was disbanded in May 2008, but the MoD and the General Staff had drawn valuable lessons from that failed experiment.

On August 8, 2008 Georgia invaded South Ossetia. Russian President Dmitry Medvedev sent Russian troops to South Ossetia and Abkhazia to help the two republics repel the Georgian attack. The ensuring short conflict received generous coverage in the Russian and foreign media. The performance of the Russian Armed Forces drew some praise, but a lot of criticism as well. The Russian command-and-control system had demonstrated its deficiencies once again. The orders and directives from the General Staff were taking too long to reach the front line because they had to be channeled via the HQ of the North Caucasus Military District, then on to the HQ of the 58th Army, and only then to the actual units and formations. In the first several hours of the Five Day War

the commanders of the battalion-size tactical groups of the 19th Motorized Rifle Division's 693rd and 135th Motorized Rifle Regiments, which were the first to join the battle, were left to their own devices. Absurdly, there were no fewer than three HQs – the General Staff, the Military District HQ and the 58th Army HQ – commanding just a few motor rifle and airborne regiments.[18]

The Five Day War had also revealed another serious problem. The Russian Armed Forces were very slow to deploy over large distances. Owing to the cumbersome organizational structure of the units and formations, it took them ages to reach the scene of the conflict. Meanwhile, the General Staff, which oversaw the deployment, could rely only on railway transport. The number of the available air transports was quite limited, enough to bring only some Airborne Troops units to the conflict zone, but not the rest of the Army forces.

In late August 2008, shortly after the end of the conflict with Georgia, the prime minister's office and the president ordered measures to improve the performance of the Russian Armed Forces. The MoD and the General Staff were tasked with implementing ambitious reforms on a very tight schedule. The media often claim that the initiative to launch the reform came from the MoD. These claims are mistaken; the reform was initiated by Russia's political leadership. The situation essentially followed the old scenario, whereby immediately after the failed first campaign in Chechnya the government ordered the creation of permanent combat readiness units and formations. Neither the resolution by the prime minister's office nor the presidential decree has been published in the media, so the specific deadlines set for the latest round of reforms remain a matter of speculation.

The transition of the Armed Forces to the "New Look" model was announced in September-October 2008. At about the same time the MoD and the General Staff drew up the plans for steps to resolve the main problems facing the Russian army.

The starting point for the new reform was an assessment of the international military-political situation. The government decided that participation in a large-scale war with several adversaries at once was no longer the primary scenario for which the Russian Armed Forces should prepare. The new scenario was participation in possible local conflicts on the Russian borders, in the CIS countries and in the near-abroad (such as the Chechen wars, the Five Day War with Georgia, etc). The reassessment of the likelihood of Russia's involvement in a large-scale war led to the decision to abandon the anachronistic mobilization system inherited from the Soviet Union.

Since the system of mobilization was to be phased out, there was no longer any need to maintain reduced and skeleton-strength units and formations, or to keep the existing network of arms and equipment storage depots.

The reform also aimed to simplify the command-and-control system by eliminating extraneous layers of command. The ax fell mostly on the command

systems that were in charge of mobilization deployment. Five directorates were to be abolished in the General Staff and the Main Commands of the individual armed services; several others were to shrink in size. Plans for the later stages of the reform included the abolishment of combined-arms armies. The number of military districts was to be cut and/or replaced by a new system of Regional Commands.

The decision to abandon the old mobilization plans means that there is no longer any need for the large network of depots and warehouses storing arms, equipment and supplies for the units to be brought to their full strength in the event of mobilization. The number of those depots and warehouses will be reduced. Some of the hardware and supplies they hold will be transferred to other Russian ministries and agencies; the rest will be handed over to the remaining units of the Armed Forces. The entire procurement and supply system of the Armed Forces was to be restructured as well, with some of its elements completely eliminated. As the reform progressed, it was decided that the job of keeping the "New Look" armed forces well-supplied with everything they need would be outsourced to civilian contractors. Another important task was to destroy the huge quantities of old and surplus munitions which the army held at the depots in case they were needed for a large-scale war.

Since local conflicts were now seen as a much more likely scenario of the Russian army than a large-scale war, it was decided to resurrect the old idea of "Mobile Forces", and to abandon the cumbersome division and regimental structure in favor of more flexible independent brigades. The core of the new brigades was to be made up of the existing permanent-readiness units and formations. They would be brought to brigade-level strength using the soldiers and equipment of the reduced and skeleton strength units being disbanded, as well as hardware from the BKhVTs. Once the new brigades were in place and the restructuring of the command system was completed, the new command-and-control system of the Russian Armed Forces would consist of three tiers: the General Staff, the Regional Commands, and the actual brigades. Once the new brigades have been fully deployed, the total number of the brigades in the Russian Armed Forces will be much greater than the number of permanent-readiness units that existed before the reform began.

The newly-created brigades were to have standard personnel and equipment tables, i.e. the same numbers of personnel armed with the same weapons and hardware. The plan was to reduce the overall numbers of military hardware and destroy all the remaining equipment that was obsolete and/or had been decommissioned.

Based on the Russian army's performance during the Five Day War in 2008, the MoD had concluded that the permanent-readiness units and formations were still too slow to deploy once they had been given their marching orders. Under the old standards a motorized rifle regiment or an independent motorized rifle

brigade would be given a maximum of 24 hours to arrive at their designated area of embarkation. Defense Minister Serdykov and the new chief of the General Staff, Army General N. Makarov, who was appointed in 2008, decided that 24 hours was far too long, and that the new operational requirements of the Russian Armed Forces necessitated a much shorter response time. The new deadline was set at 1 hour.

Another problem facing the MoD was the federal program to replace conscripts with professional soldiers. On the one hand, by 2009 the program's targets had been almost fully achieved, albeit at a great cost to the treasury. All the units involved in the program were now manned only by professional soldiers. The brigade and regiment-level live firing exercises held in 2008 showed that those units were ready for combat. But they were gobbling up more than 50 per cent of the MoD's running costs. Faced with that situation, the ministry abandoned the experiment. It was decided that some of the professional soldiers serving under contract would be released from service, while the remaining ones would be spread across the armed forces, where they would serve as sergeants and sergeant-majors. The private corps in the New Look brigades would now consist of conscripts, while sergeant-level vacancies would be filled by professional soldiers serving under contract.

The MoD has also decided to abolish the rank of warrant officers after analyzing the distribution of tasks and responsibilities between the different ranks of servicemen. The positions previously held by the warrant officers will now be filled with professional soldiers or conscripts. Up until now, 55 per cent of the positioned filled by warrant officers and senior warrant officers were "Warehouse Manager" or "Depot Manager". Since the armed forces are now transitioning to a new procurement and supply system, these positions have been abolished. It was therefore decided to abolish the rank of the warrant officer altogether instead of trying to find new jobs for them. There is a similar situation with some of the positions previously held by officers. The restructuring of the units and brigades, as well as the abolition of some directorates and departments in the HQs, Military District Commands, Main Commands, the central MoD and the General Staff mean that a large number of officers have been left without jobs. The MoD has decided to resolve this problem very radically by simply releasing the redundant officers from military service, using various mechanisms.

By late September – early October 2008 plans for the transition of the Russian Armed Forces to the New Look model had been finalized and signed off by the prime minister's office and the president.

In October 2008 the MoD held a series of meetings with officers from the HR directorates and departments to inform them of the immediate reform plans and set new objectives for them. A little later similar meetings were held

with the commanders of the military units and formations to inform them about their new tasks in the process of the transition to the New Look. The MoD also told them at those meetings which of the units and formations were to remain in the New Look armed forces, and which were to be disbanded.

In November 2008 the General Staff and the MoD began to draw up the new organizational structure and tables for the new units and brigades of the "New Look" Army. It was decided to keep the existing system of command-and-control for the combined-arms armies, with a number of changes to enable the "New Look" reforms to proceed.

In drawing up the tables for the new brigades the MoD was facing an old problem. Producing a standard equipment table for all the units was proving impossible due to the large variety of the weaponry and hardware still in service. The MoD also tried to add to those tables several new weapons systems, some of which had yet to complete their test programs. For example, the ministry decided that the anti-tank units of the motorized rifle brigades should be armed with the new Khrizantema-S self-propelled anti-tank missile system, which had not even begun the test program at the time.

In November 2008 the MoD decided to introduce a new category of servicemen: professional sergeants serving under contract. To qualify, the applicants need to take a special training course that lasts at least 2.5 years, whereupon they are given the new rank of sergeant-major. Under the MoD's plans the first servicemen were to begin the sergeant-major training program by June or July 2009.

In late November 2008 the MoD decided to hold an experimental live firing exercise involving a New Look motorized rifle brigade. The exercise was to be held in late January – early February of 2009 at the base of the Siberian Military District's 74th Independent Motorized Rifle Brigade in Yurga. The composition and the equipment table of the new brigade was drawn up and approved by the defense minister.

At that point, a typical "New Look" independent motorized rifle brigade included:

- The brigade's command and HQ;
- Three motorized rifle battalions;
- One tank battalion;
- Two self-propelled howitzer artillery battalions;
- One anti-tank battalion;
- One SAM battalion;
- One air-defense battalion;
- One rocket artillery battalion;
- One engineers battalion;

- One repair and maintenance battalion;
- One communications battalion;
- One logistics battalion;
- One reconnaissance company;
- One command and artillery reconnaissance battery;
- One NBC company;
- One radio-electronic warfare company.

In terms of its strength such a motorized rifle brigade was somewhere below a division but above a motorized rifle regiment. The MoD had also drawn up an equipment table for an independent tank brigade. Its main difference from a motorized rifle brigade was that it had three tank battalions instead of one, and only one motorized rifle battalion instead of three. It also lacked the motor rifle brigade's single self-propelled howitzer artillery battalion.

The MoD had two conflicting requirements to take into account when drawing up the new equipment tables. On the one hand, a brigade must be independent and capable of achieving the objectives set before it without relying on external support. But on the other, it must also be "light", so as to be on the march within an hour of receiving orders. That is why the new brigades now have a rocket artillery battalion (armed with 122mm BM-21 Grad MRL systems) and a command battery, but their logistics battalion and the individual logistics companies of the fighting battalions have shrunk very substantially.

Before the transition to the "New Look", motorized rifle regiments had about 2,200-2,500 servicemen; motorized rifle brigades had 3,200-3,400. The "New Look" motorized rifle brigades have 4,200-4,300 servicemen at their full strength, while tank brigades have 2,200-2,300.

Starting from December 2008 the Army units and formations transitioning to a "New Look" have been receiving soldiers from the units being disbanded; about 85 per cent of them are conscripts.

In January 2009 the MoD held an experimental brigade-level tactical live firing exercise of the reformed 74th Independent Motorized Rifle Brigade. The exercise was led by the Commander of the Army, Gen. V. Boldyrev. Under the scenario the brigade first spent 24 hours on the march, and then took up defensive positions. Having completed the defensive part of the scenario, it launched an offensive and crossed the ice-covered River Tom. To test the "New Look"brigade's firepower, the organizers of the exercise had prepared a fortified area at the 251st Military Training Range, and brought some obsolete weaponry to be used as targets. Some 24 hours before the launch of the live firing stage of the exercise, the brigade's artillery began shelling the fortified positions, and carried on for several hours. The results were then assessed by a special commission.[19]

The lessons learned and the shortcomings identified during the 74th Motorized Rifle Brigade's exercise were used to draw up changes and adjustments to the tables of the New Look brigades. In February 2009 the MoD approved the final New Look tables. The minister of defense then gave all the units and formations until July 1, 2009 to complete the transition to these new tables.

But the deadline was missed, and all the while the ministry continued making new adjustments to the tables. In August 2009 a proposal was made to increase the size of the new brigade's reconnaissance units from a company to a battalion. That was put into effect starting from September 2009. At some point in the future the MoD plans to equip these battalions with unmanned aerial vehicles.

The exercises involving army air defense units held in April and May 2009 showed that these units' equipment tables needed some adjustments as well. It turned out that their fighting ability was relatively low, and that implementing a completely uniform organization and equipment table for them was impossible. The individual units had too many different types of air defense systems in service. Nevertheless, in July-August 2009 the MoD drew up and implemented certain changes to their tables.

In late September 2009 the MoD also finalized the tables for the new Arms Storage and Repair Depots (BKhRVT), which will replace the BKhVTs and the CRDs. The BKhRVTs will be used to store and repair various weaponry, then gradually release it to the deployed units to keep their complements at full strength, rather than holding that weaponry indefinitely to be used only in the event of mobilization.

New stage of Army reform

The MoD missed its original deadlines for implementing the reform. The transition to the new equipment tables was to be completed by July 2009. That same month the MoD was scheduled to start the creation of the new Regional Commands, and to roll out the training program for the future professional sergeant-majors. But the transition to the new tables had taken until November 2009 to complete, holding back all the subsequent stages of the reform.

In September the MoD made first attempts to start the recruitment of sergeant-majors. But it immediately faced serious problems. Certain questions needed to be answered first, such as, "What is a sergeant-major?", and "Is it a professional soldier serving under contract?" But those questions remained unanswered. It was clear that sergeant-majors were a new rank. But if they are not warrant officers, let alone proper officers, then what are they? Changes were needed to the military statutes and to the Federal Law "On the status of military servicemen". Once those changes had been passed, the MoD needed to amend the list of military specialties, draw up the new payment grades and then,

based on all these documents, adjust the organization table of the military units and formations. As a result, recruitment for the new Army sergeant training program (the training center was set up in Ryazan) did not begin until October 2009. Many of the professional soldiers who were offered a place declined. Great efforts were made by the commanders of the units and by the district and army HQs to meet the recruitment targets, but those original targets were still missed, owing largely to very stringent selection criteria in terms of education and physical fitness.

In early 2010 the MoD took stock of the reforms so far. It concluded that although a lot had already been achieved, not all the changes had proved to be effective. For example, the tables of the New Look brigades required very serious adjustments. The problem with professional sergeants also remained unresolved. The training program for them had been rolled out, although the number of recruits taking part was lower than expected. But their legal status upon the completion of the program remained uncertain. Meanwhile, under the original reform schedule the MoD could no longer delay with the creation of the Regional Commands.

So as not to repeat past mistakes, the MoD and the General Staff adjusted the reform plans. They decided to revise once again the tables of the New Look brigades. They also decided to speed up the introduction of the completely standardized "heavy", "medium" and "light" brigades, which would eventually replace the motorized rifle, tank and airborne assault brigades. Instead of rushing into the rollout of new tables across the entire Armed Forces, it was decided to launch a few pilots, and then proceed based on their results, making any required adjustments along the way. The new experiment involved two motorized rifle brigades of the Volga-Urals Military District (to be transformed into the new "heavy" and "light" brigades), and the 56th Airborne Assault Brigade of the North Caucasus Military District (an experimental "light" brigade). The newly-formed 100th Independent Reconnaissance Brigade, based in Mozdok, was chosen to try out the new table for reconnaissance units, as well as to field-test new reconnaissance and radio-electronic warfare systems.

In February 2010 the MoD began the rollout of the new military-administrative and command-and-control systems across the Armed Forces. It began with abolishing the intermediary command layers and implementing the new General Staff – Operational Command – Brigade chain of command. But subsequent command staff exercises demonstrated that the need for army HQs and commands still remained. The sheer size of Russia's territory necessitated additional command layers to improve the effectiveness of the whole system. Another consideration was that in peacetime, army HQs and commands also perform administrative functions. It was therefore decided to draw up new organization tables for the army HQs and commands, which had previously

been manned under reduced temporary tables in the expectation that they would soon be completely disbanded. Initially the MoD decided that the armies would not have any units or formations directly subordinated to them; in peacetime they would serve as HQs and administrative centers. In wartime, however, they would issue direct orders to units and formations. But later on the proposal was abandoned. The MoD decided to resurrect the armies as they were before the transition to the New Look.

On August 27, 2010 the MoD officially announced the creation of the new Western Military District. On September 20, 2010 President Medvedev signed Decree No 1144 "On the military-administrative division of the Russian Federation".

The decree abolished all six of the old military districts. They were replaced by four larger districts: the Western, the Southern, the Central and the Eastern. The Western district subsumed the old Moscow and Leningrad districts. The Central includes the old Volga-Urals district and the larger part of the Siberian district (west of Lake Baikal). The Eastern district includes the territory of the old Siberian district east of Lake Baikal and the old Far Eastern district. The Southern district is the old North Caucasus district. The Navy Fleets are now subordinated to the new Military Districts (the Baltic and Northern fleets to the Western district; the Black Sea Fleet and the Caspian Military Flotilla to the Southern district; and the Pacific Fleet to the Eastern district).

Initially the new districts were supposed to be called Joint Strategic Commands (JSC). But then the MoD decided to retain the name Military District (MD), which is more traditional for peacetime. The JSC term will be used in the event of military threat. To avoid confusion with the old military districts, the MoD recommends that the new districts be rendered as "JSC-MD".

In September 2010 the MoD began rolling out the new organization tables in the army HQs and commands. It also created three new armies: the 49th Army of the Southern MD, with an HQ in Stavropol; the 6th Army in the Western MD, with an HQ in St Petersburg; and the 29th Army in the Eastern MD, with an HQ in Chita. That has brought the overall number of combined-arms armies to 10.

In June 2010 the MoD launched the program of destroying surplus ammunition, with a completion date in 2012. It also decided to reduce the number of garrisons; the remaining ones will host more servicemen, while the rest will be transferred to the local authorities. No details are available at this moment, but the MoD has been working on those plans since early 2010.

The reforms are proceeding apace, but so far it is not clear when the MoD is going to start restructuring the existing brigades into the "heavy", "medium" and "light" format. The first pilot brigades of the new format took part in a special exercise in August-September 2010, led by the Army commander, Col.

Gen. A. Postnikov. The provisional date for the rollout of the new tables in the remaining Army brigades was set for January 1, 2011.

Uncertainty also remains as to the future of the Main Commands of the individual types of troops and armed services. They seem to have lost their reason for being now that the new JSC-MDs are in place, so it can be assumed that in 2011 they will be downsized and then subsumed by the central MoD.

Preliminary numerical results of the reform in the Army

Prior to the rollout of the New Look reforms in 2008, the Army (excluding the Airborne Troops) had 24 divisions (three tank divisions, 16 motorized rifle divisions and five machine-gun and artillery divisions), 12 independent motorized rifle and rifle brigades, plus two division-strength foreign bases in Armenia and Tajikistan. Out of those 24 divisions and two military bases, only five motorized rifle divisions[20] and the 201st Base in Tajikistan were close to their full strength. Only 13 per cent of the Army units were at permanent combat readiness.

Twenty-three divisions were disbanded in 2009; by December 1 they had been replaced with 40 full-strength brigades or brigade-strength military bases. The number included four tank brigades, 35 motorized rifle brigades and one "cover" brigade (which was essentially a fortress brigade). Only two division-strength (consisting of two regiments) formations were left by the end of 2009: the 18th Machine Gun and Artillery Division in the Kuril Islands and the 201st Military Base in Tajikistan. Out of the 35 motorized rifle brigades the Army had as of the end of 2009, 10 had existed prior to 2008, 21 had been created from the motorized rifle divisions, and another four had been fielded using weapons stored in the depots.[21]

A total of 85 brigades of all types had been created as of January 1, 2010 as part of the reform, including artillery, missile and other types. But further changes were made in late 2009 and throughout 2010. For example, the 102nd Military Base in Armenia and the 201st Military Base in Tajikistan, which had initially consisted of two brigades or regiments, were later downsized to just one brigade apiece. Two independent motorized rifle brigades and one artillery brigade were disbanded in the Far East.

Seven brigades of the special task forces retain a special status. The 100th Reconnaissance Brigade, based in Mozdok in the North Caucasus, was created as an experiment. The 33rd Mountain Motorized Rifle Brigade was also restructured into a Reconnaissance Brigade.[22] Additional changes to the number of brigades were made as part of reformatting the six old Military Districts into the four new ones. There were reports in 2010 about plans to create an additional six motorized rifle brigades[23], and at least one engineers and one SAM brigade.[24]

"New Look" Army units (excluding the Airborne Troops) as of mid-2010

Unit	Leningrad MD	Moscow MD	NCMD	VUMD	SMD	FEMD	Abroad	Total
Tank brigade	-	2	-	1	1	-	-	4
Motorized rifle brigade (IFV)	-	1	3	2	4	5	2	17
Motorized rifle brigade (APC)	-	2	2	2	1	-	2	9
Motorized rifle brigade (MT-LBV)	3	-	3	-	-	2	-	8
Cover brigade	-	-	-	-	-	1	-	1
Reconnaissance brigade	-	-	2	-	-	-	-	2
Airborne assault brigade	-	-	1	-	1	1		3
BKhRVT (skeleton-strength tank brigade)*	-	1	-	-	-	-	-	1
BKhRVT (skeleton-strength motorised rifle brigade)*	1	1	-	-	5	7	-	14
Spetsnaz brigade	1	1	2	1	1	1	-	7
Missile brigade	1	2	1	1	1	2	-	8
Artillery brigade	1	2	1	1	2	2	-	9
Rocket artillery brigade	-	1	1	-	1	1	-	4
SAM brigade	1	2	1	1	2	2	-	9
Engineers brigade	-	1	-	-	-	-	-	1
18th Machine-Gun and Artillery Division	-	-	-	-	-	1	-	1

** – BKhRVT – Arms Storage and Repair Depot.*
***Source:** compiled by CAST based on media reports.*

As already mentioned, the reorganization of the Army using the brigade structure was divided into two stages. During the first stage, which had been largely completed by December 1, 2009, the MoD had formed the new brigades using a provisional version of the equipment tables, since it had to work with the weapons that were available to it. The second stage, with a completion date in 2015, will see the rollout of new tables in the existing brigades; they will be reorganized into “heavy”, “medium” and “light” brigades. The heavy brigade will be the main Army unit; armed with heavy tracked-chassis armor, it will maintain permanent combat readiness status. The medium (mobile) brigades, armed only with wheeled-chassis armor, will be used as rapid-response units. Finally, the light brigades will be highly mobile units and use light armored vehicles.[25] The first experimental brigades equipped to these standards were created in 2010.

Approximate numbers of permanent combat readiness Army units in the new Military Districts as of early 2011 (excluding training and reserve units)

Unit	West	Center	South	East	Abroad	Total
Commands of the Armies	2	2	2	4	-	10
Tank brigade	2	1	-	1	-	4
Motorised rifle brigade	6	7	8	8	-	29
Reconnaissance brigade	-	-	2	-	-	2
Cover brigade	-	-	-	1	-	1
Airborne assault brigade	-	-	1	2	-	3
Machine-gun and artillery division	-	-	-	1	-	1
Military base (motorised rifle brigade)	-	-	-	-	4	4
Spetsnaz brigade	2	1	2	2	-	7
Missile brigade	3	2	1	2	-	8

Unit	West	Center	South	East	Abroad	Total
Artillery brigade	3	1	2	3	-	9
Rocket artillery brigade	1	1	1	1	-	4
SAM brigade	3	1	2	3	-	9
Engineers brigades	2	-	-	-	-	2

Source: *compiled by CAST based on media reports*

1 http://www.dlib.eastview.com/browse/doc/2477695.
2 The Military Balance 1991–1992, P. 30.
3 Ibid, P. 36.
4 http://www.otvaga2004.narod.ru/publ_w7_2010/0034_strategy.htm.
5 http://www.russianarmor.info/.
6 http://nicbar.narod.ru/army_8.htm.
7 http://specnaz.pbworks.com/w/page/17658016/74-%D0%BE%D0%BC%D1%81%D0%B1%D1%80.
8 Ibid.
9 http://chechnya.genstab.ru/russian_kia1v.htm.
10 http://specnaz.pbworks.com/w/page/17657893/136-%D0%BE%D0%BC%D1%81%D0%B1%D1%80.
11 http://www.kp.ru/daily/22623/11851/.
12 One example of such a depot is unit No 32456 (Central Tank Reserve Depot) in Shilovo, Novosibirsk Region. The depot stored about 3,000 tanks plus other armor.
13 The Russian forces in Chechnya did not include a single full division. It consisted of individual battalion-size tactical groups or independent regiments fielded by various divisions. The 74th Independent Motorised Rifle Division had been assembled from separate battalions (military units), so it was a combined formation.
14 The Military Balance 1998.
15 5350th BKhVT.
16 http://teachpro.ru/source/obz11/Html/der11131.htm.
17 http://www.rg.ru/2007/01/10/baluevsky.html.
18 Tanks of August – CAST, 2009.
19 http://www.redstar.ru/2009/03/21_03/1_01.html.
20 Three motorised rifle divisions of the North Caucasus MD – the 19th (Vladikavkaz), 20th (Volgograd) and 42nd (Chechnya), and two divisions from other military districts: the 3rd (Nizhniy Novgorod) of the Moscow MD and the 27th (Totskoye) of the Volga-Urals MD.
21 www.ryadovoy.ru/forum/index.php/topic,422.0.html.
22 It is said that there will be "several" such brigades. See: Time for mobility. Interview with the Army commander, Gen. *Vladimir Boldyrev* // Krasnaya Zvezda, October 1, 2009.
23 Gavrilov Y. Single commander // Rossiyskaya Gazeta, June 9, 2010.
24 One new army and two brigades of the Western Military District will be formed by December 1 // www.baltinfo.ru, August 25, 2010.
25 Three new types of brigades to be created in the Army // RBK, February 25, 2010.

Reform of the Airborne Troops

Anton Lavrov

The launch of the reform of the Russian Airborne Troops (*Vozdushno-Desantnye Voiska* – VDV) predates the rollout of the wider transformations across the Armed Forces. It began in 2006, when the government adopted a five-year development program for the Airborne Troops.[1] Under that program, four of the five VDV divisions that existed at the time were to be manned only by professional soldiers rather than conscripts, and the entire service was to receive large amounts of new weaponry.

Apart from the decision to phase out conscription, the other major change was to divide the service into two specialist branches. The 98th Airborne Division (Ivanovo) and the 106th (Tula) retained their designation as parachute units (*Vozdushno-Desantnaya Diviziya*), while the 7th Division (Novorossiysk), the 76th Division (Pskov) and the 31st Brigade (Ulyanovsk) became airborne assault units (*Desantno-Shturmovaya Diviziya/Brigada).* The 7th Airborne Assault Division, which is stationed near the traditional hotspots in the Caucasus, was given an additional designation as a mountain unit – though that particular change remains mostly on paper.

The main difference between the parachute units and the new airborne assault units is that the latter will land at the airfields rather than being paradropped. They will no longer be used for large parachute landing operations. Essentially, these troops are now viewed as elite and highly mobile infantry units, which can be deployed very rapidly using any nearby landing strip capable of receiving military transport aircraft.

The parachute regiments will carry on training for scenarios that involve the entire regiment being paradropped, along with all its hardware. The airborne assault regiments, on the other hand, will have only a single battalion trained for parachute landings. These battalions can seize an airfield in enemy territory; that airfield can then be used to bring in the rest of the airborne assault regiment's or division's manpower and armor. In the event of necessity the entire airborne assault regiment can also be paradropped – but without its armor. It is not clear, however, how such a tactic can be useful because the regiment's fighting ability would be severely compromised.

The structure of the Airborne Troops companies and battalions had also undergone substantial transformations. Following the launch of the reform in 2006 they were manned only by professional soldiers and to their full wartime strength. The benefits of that move were especially obvious in the support and logistics units. Another change introduced in 2006 is that the RPG-7 reusable hand-held anti-tank rocket launchers are now issued only to specialist RPG and machine-gun squads within the companies.[2] The rest of the soldiers are armed with single-use anti-tank rocket launchers such as the RPG-18, RPG-22 and RPG-26. That has increased the VDV units' firepower and their ability to take on armor and fortifications at close quarters. Apart from the grenade and machine-gun squad, each company now also has a sniper squad armed with a large-caliber 12.7mm sniper rifle and other weaponry.

Each battalion now has a reconnaissance platoon; the airborne assault battalions have been issued 2S9 Nona-S 120mm self-propelled gun-mortar artillery systems (or 82mm man-portable mortars for mountain battalions), substantially augmenting their firepower and reconnaissance capability when working autonomously.

By 2008 most of the VDV units were manned only by professional soldiers. Only the 106th Airborne Assault Division in Tula was manned mostly by conscripts. The rest of the VDV troops became permanent combat readiness units, fully equipped and manned to their nominal wartime strength by professional solders. That enabled the MoD to revise the training program for paratroopers.

The length of the combat training program was increased from six months to a year.[3] That brought a substantial improvement in the standards of training for individual soldiers and battalions as a whole. The program now included not only company-level tactical live firing exercises but battalion-level events as

well. Such training events had given the Airborne Troops some much-needed practice of fighting in large formations, using all the available support and firepower. The objective was to enable the deployment of pre-existing battalion-size tactical groups, as opposed to cobbling these groups together from separate smaller units. The MoD often had to resort to the latter tactic during the campaign in Chechnya.

Efforts had also been made to improve the Airborne Troops' training facilities and firing ranges to make the exercises more realistic. All of those measures had resulted in substantially better training standards in the Airborne Troops compared to the rest of the Russian ground forces.

Nevertheless, the reform of the Russian Airborne Troops was far from complete by the time the war with Georgia began in 2008. Not enough time had passed since the launch of the reform for its effects to be fully felt even in such areas as the standards of training among the professional soldiers.

Airborne Troops in the Georgian conflict

The Five Day War with Georgia in 2008 has probably been the most significant event in all the post-Soviet history of the Russian Airborne Troops. The conflict has had notable consequences for the VDV service as a whole and for the direction of its reform. Several thousand airborne troops took part in the brief action against Georgia. In terms of the numbers involved it was the largest operation since 1979, when the entire 103rd Airborne Division and the 345th Airborne Parachute Regiment were sent to Afghanistan. Up to 60 Il-76, An-22 and An-124 transport aircraft took part in the airlift operation in August 2008.[4]

Not a single paradrop was performed by the Russian Airborne Troops during the operation. Nevertheless, these troops had demonstrated high mobility and fighting ability. After Georgia launched the attack on the night of August 8, it took the two battalion tactical groups formed by the 76th Airborne Assault Division's 104th and 234th Regiments less than 24 hours to arrive with all their weaponry from Pskov to the Beslan airfield situated some 2,000 km to the south. As a result, these two battalions were in South Ossetia even before the troops of the 42nd Motor Rifle Division, which had received the orders to march from nearby Chechnya simultaneously with the airborne units. Even the troops of the 19th Motor Rifle Division stationed in North Ossetia had taken longer to arrive in South Ossetia than the VDV units. The VDV battalions were also in the vanguard of the Russian counterattack on August 11. A total of four VDV battalions took part in the campaign.

Russia's Airborne Troops also played an important role in Abkhazia, although the operation there was overshadowed by the events in South Ossetia. Russia had large forces stationed in the direct vicinity of South Ossetia, ready to rush to the aid of the republic and of the Russian peacekeepers there if they ever

came under attack. Not so with Abkhazia. Moscow was therefore completely reliant on the Airborne Troops to strengthen its military presence in Abkhazia after the fighting broke out. Starting from Day 2 of the war, seven VDV battalions were rushed to Abkhazia by air, rail and sea, augmenting the single Russian VDV battalion stationed there as part of the peacekeeping forces. For the first time in recent history, one of the battalions of the 7th Airborne Assault Division's 108th Airborne Assault Regiment arrived in Abkhazia using the Black Sea Fleet's assault landing craft. By Day 5, Russia had an VDV force in Abkhazia almost equivalent in size to an airborne assault division.

The sudden arrival of the Russian forces in Abkhazia took the Georgian command completely by surprise; almost all the Georgian forces normally stationed in the west of the country had been committed to the attack on South Ossetia. Georgia's inability to defend itself from the "second front" opened up by the Russian Airborne Troops in Abkhazia had undoubtedly played a role in Tbilisi's decision to end the hostilities as soon as possible and sign a truce.

The VDV forces involved in the war with Georgia[5]

In South Ossetia:

76th Guard Airborne Assault Division:

- 104th Guard Airborne Assault Regiment (one battalion);
- 234th Guard Airborne Assault Regiment (one battalion).

98th Guard Airborne Assault Division:

- 217th Guard Airborne Parachute Regiment (two battalions).
- 45th Independent Guard Reconnaissance Special Task Force Regiment (one company).

In Abkhazia:

7th Guard Airborne Assault Division:

- 108th Guard Airborne Assault Regiment (two battalions);
- 247th Guard Airborne Assault Regiment (two battalions);
- 1141st Artillery Regiment.

31st Independent Airborne Assault Brigade (two battalions).
45th Independent Guard Reconnaissance Special Task Force Regiment (one company).

The only VDV division that did not take part in the action against Georgia was the 106th, which was manned mostly by conscripts.

In the absence of a contiguous frontline and with the Georgian forces completely disorganized, the Russian airborne troops conducted several ground raids up to 60 km deep into Georgian territory. They seized large military bases

in Gori and Senaki, a military airfield in Senaki, and Georgia's main naval base in Poti, along with part of the Georgian Navy's fleet. The decision to replace conscripts with professional soldiers in the Russian Airborne Troops and to introduce a new training system was fully vindicated during the operation in Georgia. The VDV units manned by well-trained professional soldiers were head and shoulders above the rest of the Russian ground troops in terms of their equipment, discipline, tactical training, firing accuracy and initiative.

The accomplishments of the Airborne Troops in Georgia were praised by the country's leadership and top military commanders. According to Defense Minister Anatoliy Serdyukov, "the best performance during the operation to force Georgia to peace was demonstrated by the mobile Airborne Troops units."[6] That assessment was yet another proof that the reforms of the Airborne Troops that began in 2006 were moving in the right direction.

Lessons of the war

On the whole, the war in Georgia was a success for the Russian Airborne Troops – but it had also highlighted their weaknesses and limitations. Most commentators had pointed out that even the elite rapid reaction units were armed with obsolete weaponry. The BMD-1, BMD-2, Nona-S and BTR-80 armor used by the VDV forces was inherited from the Soviet Union. It was tried and tested – but it was also aged and decrepit. No new weaponry was used during the campaign.

But the biggest cause for concern was the total inadequacy of the VDV forces' reconnaissance capability in the conflict zone. The information about the adversary supplied to the Russian troops by the North Caucasus Military District Command was very scant and insufficient for meaningful planning. The Airborne Troops' own reconnaissance capability did not go much beyond their own line of sight. The reconnaissance platoons created in every VDV battalion shortly before the war with Georgia had turned out to be poorly equipped and unable to improve the situation. This is how Gennadiy Anashkin, the commander of the 76th Airborne Assault Division's 104th Airborne Assault Regiment, described the situation: "We did not know what was going on in Tskhinvali. We knew there was some fighting going on, and that our peacekeepers were involved – but that's about it... There was no information. We did not know what lay ahead. There was not a single Russian unit ahead, not a single spy. We were the first to arrive."[7]

The Stroy-PD aerial reconnaissance system equipped with the Pchela-1T unmanned aerial vehicles turned out to be a complete disappointment. The system, used by the 45th Independent Special Task Force Regiment in Abkhazia, was bulky, noisy, difficult to operate and capable of providing only low-quality imagery – in other words, quite useless in real combat.[8]

Even though the airborne units did not have any information about the adversary they were facing, they were in the vanguard of the Russian ground troops advancing deep into Georgia. The Georgians were demoralized and in full retreat, so they did not put up much of a fight. Only two airborne troopers were killed in the South Ossetian theater. But the losses could have been much worse had the advancing Russian troops met with more competent resistance.

The problem with reconnaissance will be even worse if the Airborne Troops have to fight on their own, as opposed to being part of a much larger Russian force. In such a situation the airborne forces will not be able to rely on the Army or Air Force reconnaissance capability. And if these forces are deployed abroad, the situation with reconnaissance will be truly dire.

The MoD's response has been to try to equip the Airborne Troops with better reconnaissance technology, such as light tactical UAVs with a 10-15 km range. In the longer time frame the plan is to equip every single VDV battalion with such UAVs.

The division-level reconnaissance capability will be augmented as well. One proposal was to increase the size of each VDV division's reconnaissance component from a single company to a battalion.[9] The inadequacy of reconnaissance capability had come to light in the Army as well. That is why every "New Look" motor rifle brigade will also have a reconnaissance battalion instead of the previously planned reconnaissance company. Clearly, a VDV division, which is a larger formation than a motor rifle brigade, cannot get by with just a single reconnaissance company. Plans for the new reconnaissance battalions included arming them with heavier UAVs with a longer range. Unfortunately, the intention to give every division a reconnaissance battalion has yet to be put into practice.

The Airborne Troops Command has already held comparative tests of several Russian-made UAV models.[10] It turned out that not a single one of them fully meets all the requirements. Nevertheless, the VDV Command has selected the Eleron 3 system made by Eniks company as the base model, provided that the manufacturer can sort out the problems and shortcomings revealed during the tests. An alternative UAV now being tested by VDV units is the Strekoza, made by the Vega concern.[11] The paratroopers will also test the UAVs bought by the Russian MoD from Israel.

Another major problem highlighted by the war with Georgia is the woefully inadequate communications systems. Coordinating and commanding the combined VDV force turned out to be a major hassle both in South Ossetia and Abkhazia. In some cases even communications between battalion HQs and the higher command tiers were extremely unreliable. When a battalion of the 7th Airborne Assault Division's 108th Airborne Assault Regiment was en route from Novorossiysk to the port of Ochamchira, its own systems turned

out to be incapable of maintaining communications while at sea, and getting them to work via the Navy's systems was very difficult. As a result, the MoD has decided that the existing systems need major upgrades, and at some point in the future it wants every soldier to have his own radio communication kit.

Airborne Troops in the overall reform of the Armed Forces

The Airborne Troops' good performance in Georgia enabled the VDV command to persuade the MoD to keep the existing VDV structure. As a result, the transition of the Russian Armed Forces to the "New Look" model has affected the Airborne Troops to a lesser extent than the Army. Previous plans for the service's transition from divisional to brigade structure have been cancelled, and the decision to disband the 106th Airborne Division in Tula, which the MoD had already begun to put into effect, was reversed.[12] Nevertheless, some significant changes have already been implemented:

- 26 military units have been disbanded;
- 40 per cent of the officer positions have been cut;
- VDV units are once again manned primarily by conscripts;
- VDV divisions now have SAM regiments;
- VDV aviation units have been transferred to the Air Force.

One of the biggest changes to the structure of the VDV divisions as part of the transition to the "New Look" model has been the formation of SAM regiments in every division, replacing the old AA batteries. The air defense component of VDV divisions has been bolstered in terms of both numbers and technology. In addition to the standard man-portable anti-aircraft missile systems and small-caliber AA artillery, each VDV division now has a Strela-10M3 (SA-13) SAM battalion.

The inadequacy of the VDV units' air defense capability has long been obvious in scenarios involving these forces being airdropped behind enemy lines or used as mobile rapid-reaction forces in traditional conflicts. In such situations the airborne forces were completely reliant on air cover provided by the Air Force and Air Defense. Meanwhile, in modern warfare air defense needs to contend not only with planes and helicopters, but also with UAVs and high-precision weapons.

In previous years the Airborne Troops were involved only in peacekeeping operations and the campaign in Chechnya, so their lack of air defense capability was not critical. But the war with Georgia in 2008 has served as a reminder that the airborne units' air defenses must be able to stand up to regular armies as well. According to the Airborne Troops Commander, Lt Gen Shamanov, the Russian VDV forces in Georgia were unable to cope even with Georgian UAVs operating at medium altitude.

The conflict in Georgia therefore became an additional argument in favor of augmenting the VDV divisions' air defenses. Their anti-aircraft missile and artillery batteries became regiments in December 2009.[13] In addition to their traditional man-portable SAM systems and the ZU-23-2 artillery pieces they have been given the Strela-10M3 SAM systems. Unfortunately, the Strela-10 entered service back in 1976 and is now quite obsolete. Its range and reaction speed are insufficient to defend against modern helicopters armed with long-range guided missiles, and its vertical range is too short to fend off aircraft and UAVs operating at medium altitude.

As a result, the inclusion of the Strela-10M3 battalions in VDV divisions has not really improved these divisions' air defense capability. The old SAM system is just a stopgap solution to tide the VDV units over until the arrival of new or adapted air-defense battalions.

On January 1, 2010 as part of the program to optimize the structure of the Airborne Troops and the Air Force, all the aircraft and attendant infrastructure operated by the VDV service were transferred to the Air Force, including seven squadrons of An-2 aircraft and Mi-8 helicopters, and three airfields.

The VDV Command has repeatedly voiced concerns that the changes would adversely affect their combat training programs. Now that the VDV units have to request the aircraft for their training from the Air Force, the whole process can become mired in bureaucracy. Out of the 190,000 training parachute jumps in 2009, some 154,000, or 81 per cent, were done from the An-2 aircraft.[14] The transfer of these aircraft to the Air Force can therefore become a problem.

There have been some small-scale and one-off deliveries of new and experimental weaponry to the Airborne Troops in recent years – but the overall situation remains unsatisfactory. There have not been any large weapons procurement programs for the VDV service since the fall of the Soviet Union. The VDV armor fleet still consists predominantly of the BMD-1 and BMD-2 vehicles, which entered service in 1969 and 1985, respectively. The share of modern armor vehicles (i.e. BMD-3 and BMD-4) was only about 7 per cent in 2010.[15] A few years ago the MoD launched a program to upgrade the BMD-1 to the slightly less obsolete BMD-2 specification, but that does little to change the overall situation.

Both the BMD-1 and BMD-2 offer entirely inadequate protection for their crews and the paratroopers they carry. Even some types of small arms fire can penetrate their armor at close quarters, let alone anti-tank weapons. These inadequacies become painfully obvious even when dealing with insurgencies, such as the one in Chechnya. The BMDs are vulnerable to hand-held anti-tank weapons and roadside bombs widely used by the rebels. This vulnerability can be debilitating during action against regular armies.

The BMD-1 and BMD-2 have other major flaws as well. Their targeting systems and weaponry are not suited for action during nighttime or in poor

visibility. The MoD had plans for a mass replacement of these machines with the more capable BMD-3 and BMD-4, which have significantly more powerful and functional weapons and fire control systems. But for a variety of reasons these plans have not been implemented; only a few dozen units have been delivered to the forces so far.

As part of the 2008 reform of the Armed Forces, the MoD chose the BMD-4M made by the Kurganmashzavod company as the main type of VDV armor.[16] Tests of the first prototypes began in 2009, but mass production has not been launched so far. The BMD-4M shares about 80 per cent of its chassis and weapons components with the BMP-3 infantry fighting vehicle chosen by the Army. That should save costs and make the logistics easier.

The BMD-4M weapons are almost identical to those of the BMP-3 and BMD-4. They include a machine gun, a 30mm automatic gun and a low-trajectory 100mm rifled-bore gun. Apart from direct and low-trajectory fire, the latter can be used as a launcher for guided anti-tank missiles. Such a launch system is far more efficient that the previous one, which relied on a dedicated launcher mounted on the turret. When the missile is launched using the main barrel, the crew can make use of all the advanced targeting and visual enhancement capabilities offered by the BMD. Another important consideration is that crew members now longer have to leave the protection of the BMD's armor in order to launch the missile, making themselves vulnerable to hostile fire. All of that makes the new firing system more accurate and efficient, and reduces the risks faced by the crew.

The functionality of the BMD-4M fire control system is similar to that of the modern Russian tanks. Its infrared imager is indispensable for action during nighttime and in adverse weather conditions. The BMD-4M can fire while stationary or moving. Its target tracking device significantly improves accuracy when firing at moving targets and even low-flying aircraft. That functionality can be extremely useful against helicopters and at some point in the future against the adversary's light UAVs.

Replacing the BMD-1 and BMD-2 vehicles that now make up the bulk of the VDV armor fleet with the BMD-4M can radically improve the troops' firepower and fighting ability during offensive and defensive operations. Such weaponry will be absolutely crucial if the Russian paratroopers are to remain effective on the battlefields of the future. The only problem that has yet to be resolved is the vulnerability of the BMD-4M to anti-tank weapons. The vehicle must comply with rigid weight and size restrictions because it needs to be air-mobile and capable of being airdropped. That makes it difficult to give it sufficient protection from anti-tank weaponry.

The Russian defense industry is now developing a new multirole tracked APC for the Airborne Troops, the BTR-MDM[17], which uses the BMD-4M

chassis. At some point in the future the new vehicle could replace the BTR-D (based on the obsolete BMD-1) currently in service with the Airborne Troops.

As part of its efforts to improve the capability of the VDV artillery units, the MoD has launched a program to upgrade the 2S9 Nona-S 120mm self-propelled mortar-guns to the 2S9-1M specification. The upgrade involves the installation of GLONASS satellite navigation equipment and a new fire control system. The system enables quick and precise topographic positioning of the gun and automated processing of the data for firing. The 2S9-1M mortar-guns also have advanced communication equipment which enables them to become part of a tactical network. That translates into shorter preparation time before opening fire and more maneuverability on the battlefield with no detriment to accuracy. The upgraded mortar-guns will also be able to operate in distributed combat formations.

The upgrade program has produced several major improvements. It saves ammunition and improves the VDV artillery's survivability on the battlefield. But it has done nothing to address the inherent weaknesses of the Nona-S system, such as its short range and its relatively underpowered ammunition.

The first 12 of the upgraded 2S9-1M systems were delivered to the 98th Guard Airborne Assault Division's 1065th Guard Artillery Regiment in July 2009.[18] The upgrade program is expected to continue at the rate of one or two battalions (18-36 units) per year.[19]

A significant improvement in the VDV units' firepower was expected to be delivered by the new 2S25 Sprut-SD self-propelled artillery system. Unlike the Nona-S systems, the new guns have 125mm smoothbore tank gun similar to the ones used in the T-72 and T-80 main battle tanks. Their standard-issue ammunition includes HE fragmentation shells, sub-caliber rockets and anti-tank guided missiles. That makes the Sprut-SD effective against heavily armored targets and enables it to destroy at point-blank range all the targets that can be met on the battlefield with efficiency comparable to that of the main battle tanks. The new artillery systems have entered service with the anti-tank battalions of the VDV divisions' artillery regiments.

But apart from its obvious strengths, the 2S25 Sprut-SD also has some clear weaknesses. As with all the other weapons systems designed for the Airborne Troops, the Sprut-SD needed to be light enough to be transported by air, airdropped or floated. The designers therefore had to sacrifice its armor. Neither does the new artillery system have any active defense measures, making it vulnerable not only to weapons used by regular armies but even to grenade launchers or anti-tank guided missiles used by irregular forces.

The Sprut-SD had spent too long in development and testing. As a result, its fire control system is clearly inferior to the systems used in the latest foreign-made or Russian tanks. The absence of an infrared imager makes it much less capable during nighttime or in poor visibility. The Sprut-SD is therefore effective

only against obsolete tanks. It will fare much worse in any confrontation with modern tanks.

Besides, only two batteries have received these new artillery systems so far.[20] Further plans for the Sprut-SD are not clear. The VDV command wants to buy more of them, but Gen Vladimir Popovkin, the deputy defense minister and head of the MoD armaments department, has announced that the program has been discontinued.[21]

Meanwhile, the Airborne Troops are actively experimenting with new hardware, including powered hang gliders and paragliders, all-terrain four-wheel buggies and watercrafts, and new wheeled chassis. The bulk of this testing is done by the 45th Independent Special Task Force Regiment rather than the regular combat units. Most of the new weaponry being tested is much better suited for special operations than for the traditional battlefield. For example, the powered hang gliders and paragliders can be used for reconnaissance or even for shooting down light UAVs.

The VDV Command believes that there is an urgent need for a new wheeled armored chassis to improve the mobility of VDV units, especially their reconnaissance companies and battalions. The MoD has looked at various Russian-made and foreign products that might fit the bill. Eventually it chose the IVECO LMV light armored vehicles to be made at the KAMAZ plants in Russia. The first unit to receive the new vehicles will be the 45th Independent Special Task Force Regiment.[22]

Airborne Troops structure in 2010

The composition of the Airborne Troops in 2010 (down to regimental level for divisions and to battalion level for brigades) was as follows[23]:

7th Guard Airborne Assault Division (Mountain) – Novorossiysk:

- 108th Guard Airborne Assault Regiment;
- 247th Airborne Assault Regiment;
- 1141st Guard Artillery Regiment;
- 3rd Guard SAM Regiment.

76th Guard Airborne Assault Division – Pskov:

- 104th Guard Airborne Assault Regiment;
- 234th Guard Airborne Assault Regiment;
- 1140th Guard Artillery Regiment;
- 4th Guard SAM Regiment.

98th Guard Airborne Division – Ivanovo:

- 217th Guard Airborne Parachute Regiment;

- 331st Guard Airborne Parachute Regiment;
- 1065th Guard Artillery Regiment;
- 5th Guard SAM Regiment.

106th Guard Airborne Division – Tula:
- 51st Guard Airborne Parachute Regiment;
- 137th Guard Airborne Parachute Regiment;
- 1182nd Guard Artillery Regiment;
- 1st Guard SAM Regiment.

31st Guard Airborne Assault Brigade – Ulyanovsk:
- 54th Independent Guard Airborne Assault Battalion;
- 91st Independent Guard Airborne Assault Battalion;
- 116th Independent Guard Airborne Assault Battalion.

45th Independent Guard Special Task Force Regiment – Kubinka.

All VDV units now have a standard composition and have been brought up to their full wartime strength.

A typical "New Look" VDV division consists of:
- Two regiments (airborne parachute or airborne assault regiments, depending on the type of the division) consisting of three battalions each;
- Artillery regiment;
- SAM regiment;
- Engineers battalion;
- Communications battalion;
- Repair and maintenance battalion;
- Logistics battalion;
- Reconnaissance company;
- Medics.

In order to improve the VDV divisions' and the single VDV brigade's rapid reaction capability, each has been given a rapid reaction battalion.[24] Up to 70 per cent of these battalions' servicemen are professional soldiers[25]; many of them have real combat experience. The VDV Command is clearly aware of the shortcomings of the current system, whereby the rest of the units are manned predominantly by conscripts.

But concentrating most of the available professional soldiers in the rapid reaction battalions results in a clear disparity in the standards of combat training within the VDV divisions and brigades. That disparity will become especially

obvious in the event of a large conflict that will require more than five VDV battalions to be deployed.

According to the VDV Commander, Lt Gen Vladimir Shamanov, the fighting ability of the airborne units can be maintained at acceptable levels even if conscripts make up a large part of their numerical strength. He believes that the proportion must be as follows: 15 per cent of the VDV units' numerical strength should be officers, another 15 per cent professional sergeants who have completed a three-year training program. The remaining 70 per cent must be filled by professional soldiers and conscripts at a 50-50 ratio, with junior commanders and specialist vacancies filled mostly by professional soldiers.

The main obstacle that is preventing the transition to such a system is the shortage of trained professional sergeants. Due to their long training cycle and insufficient numbers of future sergeants currently in training, in the next few years at least there will not be enough of them to fill all the vacancies even in the Airborne Troops, let alone the rest of the armed forces. At least 5,000 of them will be needed for the VDV divisions and brigades. Meanwhile, troops are facing a shortage of professional privates, too.

As a result, the current structure of the VDV troops is the product of a compromise. The entire VDV branch of the armed forces now has 35,000 servicemen. Out of that number, 4,000 are officers, including the 400 serving in positions normally filled by sergeants because there are not enough professional sergeants available. About 7,000 are professional soldiers serving under contract. The rest are conscripts.[26]

Officers	4000	11 %
Professional soldiers	7000	20 %
Conscripts	24 000	69 %
Total	**35 000**	**100 %**

It is now becoming obvious that the decision to abandon the transition to fully professional service in the Airborne Troops was a mistake – especially since so much money and effort had already been invested into that transition. The combat training standards that had been achieved by 2008 are already beginning to slip. Fully professional VDV units had proved very capable in real combat. Under the current mixed system, meanwhile, the overall standards of

training fall sharply each time the fresh batch of conscripts is brought in, which happens twice a year. The adverse effects are being felt especially acutely in the Airborne Troops, since they are a highly mobile component of the Russian Armed Forces and as such, they must always be ready for action.

Prospects for Airborne Troops as mobile rapid-reaction forces

The key problem now facing the Russian Airborne Troops as a separate branch of the Armed Forces is that their reason for being remains unclear. Questions are being raised as to the necessity and effectiveness of large airborne troop landings in modern warfare. The predominant line of thinking now is that such landings would result in unacceptably high casualties. Meanwhile, the growing mobility of other types of troops and the increasing capability of the air forces would neutralize the advantages of having a large force of paratroopers suddenly being dropped behind enemy lines.

Ever since the fall of the Soviet Union the Russian Airborne Troops have been looking for a new raison d'etre. The most logical solution would be to use them as the core of a new highly mobile force. At the current stage of the Russian military reform the need for such a force is becoming increasingly obvious. Now that the number of military units has been cut, with reduced-strength formations completely disbanded, the next logical step is to increase the mobility of the relatively compact "New Look" formations.

Most of the existing Army brigades can certainly be moved across large distances – but not quickly enough. The equipment used by the heavy and medium motor rifle or tank brigades was designed to be moved by rail; it cannot be airlifted in large numbers. Given Russia's vast distances, rail journeys can take a very long time. Any large troop movement from the European part of Russia to the Far East or vice versa would take weeks, especially given the limited throughput capacity of the railway system and possible attacks by the adversary.

While the main Russian strength is en route by rail, the task of holding the enemy back falls to the mobile forces that can be quickly airlifted to the conflict zone. Airlifting the standard Army brigades along with all their hardware is next to impossible. Many of the tanks, self-propelled artillery, air defense systems or engineering equipment will not fit into anything smaller than the An-22 or An-124 heavy transports, of which the Russian Air Force has a very limited number. The brigades' support and logistics units will also take hundreds of flights to airlift. Even the "light" Army brigades are not really suitable for airlifting.

The Airborne Troops, on the other hand, have everything it takes to become the core of Russia's mobile forces. All their hardware and support services are suitable for airlifting across large distances. The actual structure of the VDV units and their combat training program are designed for fighting as a self-sufficient force. Airborne Troops can also be used as an expeditionary force

beyond the Russian borders. And once the VDV units have been equipped with the latest available weaponry their fighting ability will be comparable to that of the general Army units.

The Airborne Troops' suitability for rapid airlifting has been demonstrated not only during exercises but in real-life situations as well. In August 2008 the operation to airlift two battalions of the 76th Airborne Assault Division, along with their hardware, across 2,000 km from Pskov to North Ossetia took less than 24 hours. In August 2010 VDV units were airlifted to Kyrgyzstan during armed clashes in the country in order to protect the Russian airbase in Kant and the Russian diplomatic mission.[27] Essentially, the Russian Airborne Troops are already being used as mobile forces. All that remains to be done is to make the de facto situation official.

VDV wings

As a mobile rapid reaction force, the Airborne Troops can be rapidly airlifted along with all their hardware and support services to any civilian or military airfield with a suitable landing strip, in Russia or abroad. But that ability is contingent on the state of the Military Transport Aviation branch of the Air Force.

Unfortunately, the capabilities of the Military Transport Aviation Command (the former 61st Air Army) have declined in the post-Soviet period, along with the capabilities of the Air Force in general. The entire service, which has about 200 Il-76, An-22 and An-124 aircraft, can airlift no more than a single VDV regiment (along with its hardware complement) in one go. That limits the size of the VDV force that can be rapidly deployed, and significantly complicates long-distance airlifting (i.e. from the European part of Russia to the Far East).

The MoD has announced that under the current plans, by 2020 the MTA service will be able to airlift a whole division in one go.[28] The current transport fleet will therefore have to be augmented. Procurement plans center on the new Il-476 transport; mass production is due to be launched at the Aviastar-SP plant in Ulyanovsk. The VDV and MTA Commands also want to resume production of the heavy An-124 transports (up to 20 could be bought) and to place an order for the An-70 medium transport aircraft produced jointly by Ukraine and Russia. These plans are expected to be included in the State Armament Program for 2011-2020.

But the future of the medium and heavy transport projects is very uncertain. The project to resume mass production of the An-124 will require extensive cooperation with Ukraine; no final decision has yet been made. The assembly of the first Il-476 prototypes is only just beginning.[29] The design has numerous changes compared to the basic Il-76 model, so it will require an extensive testing and certification program. The An-70 project has been dogged by technical and financial problems, as well as political tensions between Russia

and Ukraine. Relations between the two have been improving lately, but that does not mean that all the outstanding problems with the An-70 will be quickly resolved. Mass production of the An-70 and the Il-476 is therefore unlikely to begin before 2015. New deliveries of the An-124 are an even more distant prospect. So while the MTA service is waiting for new deliveries, it will be very important to maintain the existing fleet in good working order. One important project in this area is to upgrade the Il-76 VTA fleet and to replace its engines; these aircraft still have many years of service left in them.

Apart from the new transports, the VDV Command has long been calling for the airborne assault divisions and brigades to be armed with attack and transport helicopters. Previously those requests were unrealistic because of the shortage of helicopters. But now that helicopter procurement programs for the Army are gaining pace, the MoD has decided to assign some of these new helicopters to airborne assault units. That will give the Airborne Troops greater flexibility and increase their fighting ability as a mobile force. The 31st Guard Airborne Assault Brigade in Ivanovo is currently the first in line for helicopter deliveries.[30]

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1 VDV troops ready for take-off // Krasnaya Zvezda, March 24, 2007.
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Reform of the Russian Air Force

Anton Lavrov

The Russian Air Force is one of the two armed services, along with the Army, to have undergone some of the deepest and most wide-ranging reforms since 2008. These transformations aimed to resolve all the serious problems that had piled up over the previous 10-15 years.

The shape of the Russian Air Force had remained largely unchanged since the late 1990s, when many Air Force and Air Defense regiments were merged or disbanded during the previous wave of reforms in 1997-2000, and the two separate services became one. The handover of Army aviation to the Air Force in 2003 did not cause any drastic changes. By the time the latest round of reforms began in the autumn of 2008, the Russian Air Force and Air Defense was still a formidable force – at least on paper. It operated up to 2,800 aircraft and helicopters, plus about 100 batteries of the S-300 and S-400 SAM systems.[1]

The service's biggest problem was that its old weaponry was rapidly approaching the end of its life span, with deliveries of new equipment few and far between. Procurement of new aircraft and helicopters fell sharply immediately after the fall of the Soviet Union, and petered out completely in 1994-1995. By 2008, the Air Force's youngest aircraft were 15-20 years old. Most of its

weaponry, including air defense systems, was (and still is) even more decrepit. In the past 15 years the Air Force has lost up to 200 aircraft and helicopters to various incidents, including combat and non-combat losses. Those that still remain are old and obsolete.

The growing technology gap between the Russian and Western air forces is especially obvious in the segment of multirole fighters, which has been evolving very rapidly over the past two decades.

When the first Su-27 and MiG-29 fighter jets were delivered to the Soviet Air Force in 1982-1984, they were outstanding aircraft, some of the best in the world. But that was more than 20 years ago, and the competitors have since moved on. The technology used in fighter jets and their weapons has made great strides forward. The United States now has the fifth-generation Lockheed Martin F-22 fighters, which are far superior even to the modernized Boeing F-15 and Lockheed Martin F-16 jets.

Meanwhile, work on America's new Lockheed Martin F-35 fifth-generation fighter is nearing completion. This aircraft could well become the Russian Air Force's main adversary in future conflicts. Unlike the F-22s, which are reserved for the US Air Force, the F-35 will be offered to foreign buyers, including not only NATO countries but Russia's other neighbors such as Finland, Japan[2], and others.

While developing these revolutionary new aircraft, Western defense contractors have also continued to improve and upgrade the previous generation of fighter jets that first came to market simultaneously with or even before the Su-27 and the MiG-29. Some of those aircraft, in addition to being very formidable fighters, have now gained multirole attack capability.

Several Russian neighbors, including China and India, now operate hundreds of Russian-designed multirole fighters. The improved fourth generation fighters Russia had been selling to them, along with new and improved munitions, were much superior to the obsolete systems operated by Russia's own Air Force.

Over the past 20 years the leading foreign powers have made a real breakthrough in equipping their aircraft with extremely capable avionics and high-precision weapons, substantially bolstering the fighting ability of even the older-generation systems. Meanwhile, the Russian Air Force has been completely reliant on the existing Soviet stocks of munitions. The Russian defense industry has developed some modern airborne weapons systems, such as the R-77 (RVV-AE, AA-12) air-to-air medium-range active radar-guided missile, which has been very popular with foreign buyers. But Russia's own armed forces could not afford them.

Unfortunately, the Russian Air Force is still stuck with fighters and other aircraft technology dating back to the mid-1980s. By 2008, when the reform began, the bulk of its fleet and weapons systems were venerable Soviet-made hardware.

The fact that most of the Russian combat aircraft are 20-25 years old is not, in itself, a disaster. But after many years of skimping on repairs and maintenance, especially in the 1990s and early 2000s, much of that fleet was in a very shoddy state of repair. The standard Air Force regiment had 24 combat aircraft in 1998, plus some trainers – but few of them were actually flight-worthy. To illustrate, the 14th Fighter Aviation Regiment in Kursk had only 15 flight-worthy MiG-29 aircraft[3] in 2007, and even those had old engines nearing the end of their life span. Such a situation – especially with regard to the engines – was typical for the rest of the Russian Air Force.

The MoD launched upgrade programs for its fleet of Su-27SM, Su-25SM, Su-24M2 and Mi-24PN aircraft and helicopters in the mid-2000s. But the funding allocated for these programs was sufficient to improve the situation only in individual regiments rather than the entire Air Force.

Also in the mid-2000s the MoD substantially increased spending on combat training. But the average number of flight hours clocked in by the Russian Air Force pilots showed only a modest growth. Even though the regiments now had enough fuel available for training, many of their aircraft were too decrepit to take to the air. A typical frontline aviation regiment had all the pilots taking turns with a handful of the least old planes. The other aircraft had too few flight hours still left in them, so they were being kept on the ground in case they were needed for real combat action. As a result, it was physically impossible for the pilots to clock in enough hours for proper training. The situation was compounded by the fact that the less experienced pilots were not allowed to train in adverse weather conditions, so they had fewer days available for them to train. Poor training was making it difficult to conduct complex exercises involving large groups of aircraft or the use of guided weapons by bombers and attack aircraft.

A dire warning about the technical state of the Russian Air Force fleet came in 2008, when two MiG-29 fighters crashed after their corroded tail fins disintegrated in mid-flight.[4] The same problem was found in 80 per cent of the remaining MiG-29 aircraft still in service after the entire fleet was grounded for inspections.[5] At least a third of the MiG-29s were affected so badly that they had to stay grounded for several months pending repairs.

The conflict with Georgia in August 2008 also revealed the depth of the Russian Air Force's problems. As many as six combat aircraft (three Su-25's, two Su-24M's and one Tu-22M3) were lost during the five days of combat action against a relatively weak opponent. That came as a complete shock. The Russian air strikes, which relied primarily on unguided munitions, turned out to be largely ineffective. The Russian Air Force failed to suppress the Georgian artillery or to inflict substantial losses on the Georgian troops, even when they were on the march and vulnerable to airstrikes. These failings laid bare all the problems with the obsolete Russian equipment, insufficient combat training

of Air Force pilots and the cumbersome command-and-control system. Poor performance during the Georgian conflict became one of the key reasons for the ensuing large-scale reform.

Structural reform of the Russian Air Force

A radical restructuring of the Russian Air Force has been one of the key stages of the transition to the "New Look" model that began in the autumn of 2008. In terms of its scale it has been unprecedented since the 1990s, when Russia had to trim down the huge forces it had inherited from the former Soviet Union. Practical steps to reorganize the Air Force were launched on December 1, 2008. The first stage of the structural reform had been completed by December 1, 2009,[6] after the MoD disbanded aviation regiments and independent squadrons, air divisions and corps, and air armies, replacing them with air bases and aerospace defense brigades.

After conducting an assessment of the results achieved so far, the government updated its plans and on December 1, 2010 rolled out the second stage of the structural reform. It included a substantial reduction in the number of independent airbases, including several that had been formed during the first stage. The disbanded airbases were mostly subsumed by the remaining ones as air groups. Unlike the first stage of the reform, the second one did not include any substantial reduction in the number of aircraft.

One of the key elements of the Air Force and Air Defense reform was to abandon the existing "air army – corps (division) – regiment" structure. The air armies were replaced with independent Commands for Air Force and Air Defense, Long Range Aviation, and Military Transport Aviation. Air Defense corps and divisions were replaced with aerospace defense brigades. The commands now include airbases, aerospace defense brigades and smaller logistics units. Airbases are made of squadrons, which are the main Air Force tactical unit, while the aerospace defense brigades are made of regiments. The Russian Air Force has therefore completed the transition to a three-tier "command – airbase (brigade) – squadron (regiment)" system.[7]

The former 37th Air Army of the Supreme Command (Strategic Command) has been transformed into the Long Range Aviation Command, which controls all the Russian strategic and long-range bombers, as well as aerial refueling tankers. The initial plan was for this command to control the Russian Navy's naval missile-carrying aviation (Tu-22M3 aircraft), but so far this has not been implemented.

The 61st Air Army of the Supreme Command (Military Transport Aviation) has been transformed into the Military Transport Aviation Command.

The Special Purpose Command (and the 16th Air Army, which was its constituent part) has been transformed into the special-status Operational Strategic Command of Aerospace Defense, which controls the air defenses

around Moscow and most of the territory of the Moscow Military District. The new command became operational on July 2, 2009.[8]

The MoD has also set up four new territorial commands to replace the six former Air Force and Air Defense armies, which were subordinated to the six former Military Districts. On the whole, the system whereby the commands are subordinated to their respective military districts remains in place, but in a number of cases the former Air Force and Air Defense armies have been merged, or their areas of responsibility have been partially reallocated.

- The 1st Air Force and Air Defense Command has been created from the 6th Air Force and Air Defense Army (Leningrad Military District). The new command is also responsible for part of the western territory of the Moscow Military District, and controls all the attack aviation of the former 16th Air Army.
- The 2nd Air Force and Air Defense Command has been created from the 14th Air Force and Air Defense Army (the Siberian Military District, which includes the territory of the former Trans-Baikal Military District).
- The 3rd Air Force and Air Defense Command has been created from the 11th Air Force and Air Defense Army (the Far Eastern Military District).
- The 4th Air Force and Air Defense Command has been created from two Air Force and Air Defense armies: the 4th (North-Caucasus Military District) and the 5th (Volga-Urals Military District). The new command is therefore in charge of the huge territory of three former Soviet military districts.

In 2010 the four new Air Force and Air Defense commands became part of the four new Military Districts (also known as Joint Strategic Commands): the 1st Air Force and Air Defense Command is part of the Western Military District; the 2nd Command is part of the Central Military District; the 3rd Command is part of the Eastern Military District, and the 4th Command is part of the Southern Military District.

One of the key elements of the Air Force reform has been the transition to airbases, which are now the main structural unit of the Air Force, and to aerospace defense brigades in Air Defense. As a result, the former regimental structure, which had existed since 1938, has been abolished. The new airbases, which have now replaced the old air regiments, combine the forces of the former regiments with the previously independent support units. The airbases also include the previously independent airfield logistics, communications and radar battalions.

The result of that restructuring is a single chain of command within the airbase. The objective was to subordinate all the aviation and support units to the commander of the airbase. Such a system has been in place in Belarus for many years; indeed, according to some reports, that is where the Russian MoD

had borrowed the idea from. The merger of the previously independent support units means that the command structures are now much leaner, with fewer commanding officers. The former commanders of the previously independent units have been given the status of deputy airbase commanders. This change has been in line with the spirit of the overall reform of the Russian Armed Forces, and the objective of reducing the proportion of officers in the armed services.

Many of the newly formed airbases are much larger than the former individual air regiments were. Some of them have taken over the equipment and personnel of more than one disbanded air regiment or independent squadron. There are two types of airbases in the Russian Air Force: the larger Class 1 bases, and the smaller Class 2 bases. The former have several airfields at their disposal. Each of those airfields is home to a permanently stationed air group, which includes one or two, sometimes up to three squadrons. Such air groups are equivalent in size to the former air regiments: as a rule, they have actually been formed from those regiments. A typical Class 1 airbase also has a command post at each of its airfields that are not used as a permanent base by air groups or squadrons. These command posts are in charge of maintaining such airfields in a good state of repair, so that they could be used as temporary bases or backup and staging airfields if and when the need arises. A typical Class 1 airbase is therefore the present-day equivalent of the former air divisions.

The Class 2 airbases are much smaller, roughly equivalent in terms of their strength to the former air regiments. They typically have only one airfield, with two or three air squadrons and one or two command posts.

Plans for the number of airbases to be formed as part of the reform have been revised downwards on more than one occasion. The initial plan was to reduce the overall number of Air Force and Air Defense units and formations during the first stage of the reform from 340 to 180.[9] The Air Force command said that "as part of the reorganization, 84 per cent of the Air Force units will be reformed; out of that number, 10 per cent will be disbanded, 22 per cent relocated or reformatted, and 68 per cent moved to new personnel and equipment tables".[10] But upon completion of the second stage of the reform, the Russian Air Force had only 15 new airbases, which had replaced the 72 air regiments, 14 former airbases and 12 independent air squadrons and groups that existed in 2008.[11]

All the new airbases and aerospace defense brigades are permanent combat readiness units, manned and equipped to their full wartime strength. That translates into more stringent requirements for the availability and technical condition of Air Force and Air Defense weaponry and equipment. The positive effects have been especially obvious in some units of Air Defense SAM troops; some of those regiments were skeleton-strength formations when the reform began.

The widespread practice of merging two or more of the previously independent air regiments within the new airbases has necessitated large-scale

relocations of personnel and equipment. Personnel relocations have resulted in numerous practical problems. The situation is especially difficult at the large airbases formed through merger of several regiments. All the servicemen and their families relocated to the new bases, as well as the officers made redundant as part of the restructuring, need to be provided with housing. The remaining garrisons are chock-full, and their social infrastructure is creaking under the strain. These problems will persist at least until 2013, by which time the MoD hopes to provide all the officers with adequate housing.

The Air Force personnel training system has also been revamped. On September 1, 2008, two leading Air Force training centers – the Gagarin Air Force Academy in Monino (Moscow Region) and the Zhukovsky Air Force Engineering Academy in Moscow were merged into the Zhukovsky and Gagarin Air Force Academy based in Monino. Training of all Air Force pilots is now the sole remit of the Krasnodar Air Force Institute. The number of specialist training centers is being cut. It is worth noting that pilot training centers will retain the existing regimental structure, although the number of those regiments will be reduced from 13 to 10.

All the formerly independent Air Force combat training centers have been merged into the MoD's 4th State Pilot Training and Military Testing Center, with an HQ in Lipetsk.[12] It has subsumed the Frontline Aviation Pilot Training Center in Lipetsk and several similar centers, including the Army Aviation Pilot Training Center in Torzhok, the long range aviation center in Ryazan, the military transport aviation center in Ivanovo and the unmanned aviation center in Yegoryevsk, along with all their airfields and training ranges. The Air Force research and development institutes are now part of the 4th Center as well.

Current structure of the Russian Air Force

As of early 2011, the structural reform of the Russian Air Force and Air Defense was still ongoing. Relocations of personnel and equipment continued. What is more, the MoD was still revising such basic targets as the number of airbases to be left in service. Upon completion of the first stage of the reform the Russian Air Force looked as follows:

Structure of the Russian Air Force as of December 1, 2010.[13]

Aerospace Defense Operational Strategic Command (Moscow):

- 4th Aerospace Defense Brigade (Dolgoprudnyy);
- 5th Aerospace Defense Brigade (Petrovskoye);
- 6th Aerospace Defense Brigade (Rzhev);
- 6963rd Airbase – MiG-29SMT (Kursk);
- 6968th Fighter Airbase – Su-27, MiG-31 (Khotilovo).

1st Air Force and Air Defense Command (Voronezh):
- 1st Aerospace Defense Brigade (Severomorsk);
- 2nd Aerospace Defense Brigade (Khvoynyy);
- 6961st Airbase – Su-27 (Besovets);
- 6964th Airbase – Su-24M, Su-24MR (Monchegorsk);
- 6965th Airbase – Mi-8, Mi-24 (Vyazma);
- 7000th Airbase – Su-24M, Su-24MR, Su-34 (Voronezh).

2nd Air Force and Air Defense Command (Yekaterinburg):
- 9th Aerospace Defense Brigade (Novosibirsk);
- 10th Aerospace Defense Brigade (Chita);
- 6979th Airbase – MiG-31 (Kansk);
- 6980th Airbase – Su-24M (Chelyabinsk);
- 6982nd Airbase – MiG-29 (Domna).

3rd Air Force and Air Defense Command (Khabarovsk):
- 11th Aerospace Defense Brigade (Komsomolsk-upon-Amur);
- 12th Aerospace Defense Brigade (Vladivostok);
- 6983rd Airbase – Su-25, Mi-8, Mi-24 (Vozdvizhenka);
- 6987th Airbase – Su-27SM (Dzemgi);
- 6988th Airbase – Su-24M, Su-24M2, Su-24MR (Khurba);
- 6989th Airbase – Su-27SM (Tsentralnaya Uglovaya);
- 265th Transport Airbase (Khabarovsk).

4th Air Force and Air Defense Command:
- 7th Aerospace Defense Brigade (Rostov-upon-Don);
- 8th Aerospace Defense Brigade (Yekaterinburg);
- 6970th Airbase – Su-24M (Morozovsk);
- 6971st Airbase – Su-25SM, Mi-8, Mi-24, Mi-28 (Budennovsk);
- 6972nd Airbase – (Krymsk);
- 6974th Airbase – Mi-8, Mi-24, Mi-28 (Korenovsk);
- 6977th Airbase – MiG-31 (Perm);
- 999th Airbase – Su-25, Su-27, Mi-8 (Kant);
- 229th Transport Airbase (Rostov-upon-Don).

Military Transport Aviation Command (Moscow):
- 6955th Airbase – Il-76 (Tver);
- 6956th Airbase – Il-76 (Orenburg);
- 6958th Airbase – Il-76 (Taganrog);
- 6985th Airbase – Il-76 (Pskov).

Long Range Aviation Command (Moscow):

- 6950th Airbase – Tu-22M3, Tu-95MS, Tu-160 (Engels);
- 6952nd Airbase – Tu-95MS (Ukrainka);
- 6953rd Airbase – Tu-22M3 (Sredniy).

But very soon that new structure was re-jigged once again. On December 1, 2010 the MoD launched a new wave of cuts and relocations. Many of the newly formed airbases were disbanded.

So far, many details about the post-reform structure of the Russian Air Force remain a matter of speculation. But the general outlines are clear. According to the Commander of the Russian Air Force, Col. A.N. Zelin, as of December 2010 the Russian Air Force and Air Defense included the Main Command, seven Operational Commands, seven Class 1 airbases and eight Class 2 airbases, plus 13 aerospace defense brigades.[14] Each of the four new Military Districts had a Class 1 airbase. There were two more Class 1 airbases in the Long Range Aviation Command, and one in the Military Transport Aviation Command.

The numerical strength of the Russian Air Force was 170,000 servicemen, including 40,000 officers and 30,000 professional soldiers serving under contract.[15]

The numbers of aircraft left in the Air Force and Army Aviation after the reform has not been disclosed. It is known, however, that the plan was to reduce them by no less than a third.[16] The actual cuts have probably been even deeper. The relocation and merger of the Air Force units has enabled the MoD to get rid of large numbers of old aircraft that were formally listed as in service but no longer able to fly.

The 6961st Airbase of the 1st Air Force and Air Defense Command in Besovets is a case in point. That fighter airbase, the only remaining in the northwest of Russia, was formed by merging as many as three fighter air regiments: the 9th (Kilp-Yavr), the 159th (Besovets) and the 177th (Lodeynoye Pole). The three regiments had a combined six squadrons between them. After their merger, the new airbase had only two squadrons left, cobbled together from those aircraft in the former six squadrons that were actually worth keeping.[17] But even those were old and decrepit. On December 1, 2010 the 6961st Airbase was disbanded to become one of the air groups of the 7000th Class 1 Airbase, though it retained both of its squadrons.

The numbers of aircraft of all types in service with the Russian Air Force has fallen substantially as a result of the reform – but that was merely a belated recognition of the facts on the ground. In contrast, the Air Defense units have not undergone any substantial cuts since the start of the reform; the number of regiments and batteries remains more or less unchanged.

In order to save costs the MoD has decided to cease operations at the majority of the 245 airfields that were on its balance books prior to the reform. There are now only 27 main airfields left in active use.[18] A few dozen more will retain their command posts and continue to be maintained as backups. The rest will essentially be abandoned – though that, too merely reflects the facts on the ground that existed prior to the reform. In order to compensate for the lost airfields, the government is planning a new law that would allow the Russian Air Force to make use of civilian airports in the event of necessity, free of charge.[19]

The final structure of the Russian Air Force upon the completion of the latest round of reform in late 2010 was not made public, either – but there is sufficient information available to make some preliminary conclusions.

Approximate structure of the Russian Air Force as of early 2011.[20]

Aerospace Defense Operational Strategic Command (Moscow):
- 4th Aerospace Defense Brigade (Dolgoprudnyy);
- 5th Aerospace Defense Brigade (Petrovskoye);
- 6th Aerospace Defense Brigade (Rzhev).

1st Air Force and Air Defense Command (Voronezh):
- 1st Aerospace Defense Brigade (Severomorsk);
- 2nd Aerospace Defense Brigade (Khvoynyy);
- 7000th Class 1 Airbase – Su-24M, Su-24MR, Su-34, Su-27 (Voronezh);
- 378th Airbase – Mi-8, Mi-24 (Vyazma);
- 549th Airbase – Mi-8, Mi-24 (Levashovo);
- 800th Airbase – Il-76, An-12, Tu-134, Tu-154, Mi-8 (Chkalovskiy).

2nd Air Force and Air Defense Command (Yekaterinburg):
- 9th Aerospace Defense Brigade (Novosibirsk);
- 10th Aerospace Defense Brigade (Chita);
- 6980th Class 1 Airbase – Su-24M, MiG-31, Tu-134UBL, Mi-8, Mi-24 (Chelyabinsk);
- 412th Airbase – MiG-29, Su-25, Mi-8, Mi-24 (Domna).

3rd Air Force and Air Defense Command (Khabarovsk):
- 11th Aerospace Defense Brigade (Komsomolsk-upon-Amur);
- 12th Aerospace Defense Brigade (Vladivostok);
- 14th Aerospace Defense Brigade (Petropavlovsk Kamchatskiy);
- 6983rd Airbase – Su-25, Su-27SM (Vozdvizhenka);
- 6988th Class 1 Airbase – Su-24M, Su-24M2, Su-24MR (Khurba);
- 573rd Airbase – An-12, An-26, Mi-8 (Khabarovsk).

4th Air Force and Air Defense Command (Rostov-upon-Don):
- 7th Aerospace Defense Brigade (Rostov-upon-Don);
- 8th Aerospace Defense Brigade (Yekaterinburg);
- 6971st Airbase – Su-25SM, Mi-28N (Budennovsk);
- 6972nd Class 1 Airbase – Su-27, MiG-29, Su-24MP (Krymsk);
- 393rd Airbase – Mi-8, Mi-24, Mi-28N (Korennovsk);
- 999th Airbase – Su-25, Su-27, Mi-8, Mi-24 (Kant, Kyrgyzstan).

Military Transport Aviation Command (Moscow):
- 6955th Class 1 Airbase – Il-76 (Tver).

Long Range Aviation Command (Moscow):
- 6950th Class 1 Airbase – Tu-22M3, Tu-95MS, Tu-160 (Engels);
- 6952nd Class 1 Airbase – Tu-95MS (Ukrainka).

After subsuming the disbanded airbases, some of the remaining Class 1 bases are even larger than the pre-reform air divisions. One example is the 7000th Airbase, Russia's largest, formed on December 1, 2010. It has an HQ in Voronezh and five air groups spread across vast territories from Russia's extreme northwest to the midlands.

Air groups of the 7000th Airbase

Base	Aircraft	Pre-reform
Voronezh	Su-24M, Su-34, MiG-25RB	455th Bomber Air Regiment
Petrozavodsk	Su-27	9th, 159th, 177th Fighter Air Regiments, then 6961st Air Base
Monchegorsk	Su-24MR, MiG-25RB	98th Independent Reconnaissance Air Regiment
Khotilovo	MiG-31, Su-27	790th Fighter Air Regiment
Kursk	MiG-29SMT	14th Fighter Air Regiment

The distance from Monchegorsk in Murmansk Region to the Khalino airfield in Kursk Region is over 1,800km. The five air groups of the 7000th Base have up to 200 aircraft between them, including fighters, interceptors, tactical

bombers and reconnaissance aircraft. It remains to be seen whether such a diverse fleet spread across such vast territories can be effectively controlled from a single airbase. The situation is compounded by the fact that the HQs of the new Class 1 airbases have fewer officers than the pre-reform air corps and air armies.

Frontline aviation

Frontline aviation remains the largest branch of the Russian Air Force after the reform. It includes fighters, tactical bombers, ground attack aircraft and reconnaissance planes.

Without air superiority or at least air parity, effective use of aviation in a conflict with a strong adversary is next to impossible. That is why the MoD's priority was to modernize the fighter component of frontline aviation. More money has been spent on developing new and upgraded fighter jets than on any other R&D program. The main result of all that spending has been the maiden flight of the first prototype of the T-50, Russia's fifth-generation fighter, in early 2010.

Back in the mid-2000s, when money was still very short, the MoD initiated a program to upgrade the Air Force's existing Su-27 fighter jets to the Su-27SM specification. The Sukhoi corporation upgraded 55 aircraft in 2003-2008. Out of that number, 48 were delivered to the 22nd Fighter Air Regiment (Tsentralnaya Uglovaya) and the 23rd Fighter Air Regiment (Dzemgi), both in the Far East, and both now transformed into air groups of the 6983rd Class 1 Airbase.

The upgrade was not very radical, but it was combined with the refurbishment of the aircraft's airframe, extension of other systems' service life and installation of new engines. As a result, the units armed with the upgraded Su-27 jets were able radically to improve their equipment readiness indicators and ramp up their combat training program. They quickly became the leaders among the Air Force's fighter regiments in terms of the number of flight hours clocked up by their pilots. That demonstrated the advantages of focused upgrade programs compared to the previous practice of deeply refurbishing one or two aircraft per regiment every year, which did not produce any visible improvements. In addition to the Su-27SM upgrade program, during the MAKS-2009 air show the MoD signed a contract for the delivery of 12 newly built Su-27SM3 fighters by 2011. Compared to the upgraded version of the plane, the new aircraft will have improved electronics and weapons systems.

The program to upgrade MiG-31 fighters to the MiG-31BM specification is proceeding at a slower pace. Only a few aircraft are being upgraded every year; no more than half of the fleet has been upgraded so far. There are no plans to resume production of these aircraft. But the fact that the existing ones are being upgraded suggests that the MoD does not plan to retire them any time soon.

Meanwhile, the contract for 28 MiG-29SMT and six MiG-29UBT fighters, which were previously destined for Algeria, has been the Russian Air Force's

first mass procurement program for a very long time.[21] The aircraft are not entirely new; the airframes and some of the components were built in Soviet times. Nevertheless, they are no less capable for that. In terms of their onboard radars and electronics, as well as the weapons they can carry, they are the most advanced fighters currently in service with the Russian Air Force.

But those laurels will soon be snatched by the heavy Su-35S fighters; on August 18, 2009 the Russian Air Force placed an order for 48 such jets with the Sukhoi company. The last batch will be delivered in 2015.[22] The Su-35S jets will be a stopgap between the fourth generation fighters, which still make up the bulk of the Russian fleet, and the future fifth-generation fighter. They incorporate the latest technologies now available to the Russian defense industry. They will also serve as a test bed for some components that will be used in the fifth generation fighter.

The Su-35 jets require only a single pilot, but the two-pilot trainer modification is not yet ready. The existing Su-27UB two-seater trainers are not adequate as replacement for the much more advanced Su-35. The Air Force has therefore placed an order for four Su-30M2 two-seater trainers, which are very similar in terms of their onboard equipment to the Su-35. The contract was for delivery by the end of 2011[23], but the manufacturer had pulled out all the stops, and by the autumn of 2010 the first of the four aircraft to be delivered to the Russian Air Force had already begun flight tests.[24] By the year's end all four had been delivered. Two remain in service with the 6983rd Airbase in the Far East; another two have been transferred to the 6972nd Airbase in Krymsk, Southern Military District. That may be an indication of where the new Su-35S jets will serve once they have been delivered.

The prototype of the Russian stealth fifth generation fighter (known as the PAK FA, or the T-50), developed by Sukhoi, took off for its maiden flight on January 29, 2010. The fighter and its various modifications will be the Russian Air Force's main instrument of winning air superiority over the next several decades. The plan for now is to deliver the initial batch of 10 aircraft by 2015, and then 60 final-specification jets between 2015 and 2020.[25] But given the complexity of designing, developing, manufacturing and entering into service a completely new type of aircraft, it is very likely that some deadlines will be missed.

The Su-35S is therefore likely to remain the most advanced mass-produced fighter in service with the Russian Air Force for the next seven to 10 years at the very least. It cannot be ruled out that if the PAK FA program is hit with delays, the Air Force will place more orders for the Su-35S after 2015. The plan was for the first new mass-produced Su-35S jet to be delivered to the Russian Air Force for testing before the end of 2010[26] – but that deadline was missed. The maiden flight of the first final-spec Su-35S took place on May 3, 2011,[27] and its delivery to the Air Force was postponed until the second half of 2011.

The situation with fighter jets for the Russian Air Force is quite clear and easily predictable for the next several years. But the prospects for the large fleet of specialized tactical bombers remain uncertain. Initially the Air Force command said that the existing Su-24 and Su-24M bombers would be replaced by the radically new Su-34 attack aircraft.[28] But for now, there is only one contract signed by the Air Force in 2008 for the delivery of 32 such aircraft by 2013. The project to launch mass production of the Su-34 has run into serious trouble. The maker (OAO Novosibirsk Aviation Company) has been distracted by a massive retooling and staff retraining program. Only the first five Su-34 aircraft were delivered to the Air Force in 2007-2009. Meanwhile, the aircraft has not yet completed the joint state tests program, and changes continue to be made to its design and specifications. As a result, even the five planes already delivered, which were supposed to be "mass produced to final specifications", are not identical.

Nevertheless, efforts to bring the mass production program up to speed have already begun to yield results. In 2010 the Air Force took delivery of the first four Su-34 jets under the 2008 contract.[29] In 2011 the manufacturer plans to produce another six to eight, having incorporated all the latest changes – so it is these planes that will truly be the first "mass produced to final specification". They will have a longer list of compatible weapons systems, upgraded AL-31FM1 engines and an auxiliary power plant.[30]

But the forty or so Su-34 aircraft (including pre-production versions) will not be enough to replace all the Su-24M tactical bombers now in service. That is why the MoD has launched a program to upgrade the existing fleet. Sukhoi upgraded about 30 jets[31] to the Su-24M2 specification in 2007-2009. They are now in service with the 6988th Airbase in Khurba and the 4th Combat Training Center in Lipetsk. The MoD is now modernizing its Su-24M fleet using the upgrade option developed by the Gefest & T company – but most of the existing jets have yet to be upgraded. Meanwhile, the early Su-24 modifications have all been retired during the recent round of decommissioning.

The MoD plans that at some point bombing raids may become the remit of multirole aircraft, such as the Su-34 and future fighters, which can employ the whole range of air-launched weapons, making specialized bombers redundant.

Although the Su-34 has entered service only recently, it has already seen real action. Two pre-production units delivered to the Air Force a few years ago were used during the Five Day War with Georgia.[32] One of them took part in an operation to disable the Georgian air defenses, during which it destroyed a key Georgian 36D6-M radar in the village of Shavshvebi, near Gori, with an anti-radar missile.

Deliveries of the upgraded Su-25 attack aircraft began in 2006, when six of the Su-25SM jets entered service with the 368th Attack Air Regiment in Budennovsk.[33] Deliveries have continued since then at a rate of six to eight aircraft per year. A total of 40 Su-25 aircraft had been upgraded as of late 2010.

The MoD is not planning any serious reductions of the Su-25 fleet, but neither is it planning to buy any new aircraft of that type. It has been decided instead that the service life of the existing Su-25's will be extended to 40 years.[34] That will enable most of them to remain in service until 2025-2030. In order to train pilots for the upgraded attack aircraft, the Air Force has placed an order for an upgraded Su-25UB two-seater trainer version. Production of the new Su-25UBM began at the Ulan-Ude Aircraft Plant in 2009. The Air Force intends to buy at least 16 of them.[35] The first planes from the initial batch were assembled and tested in 2010. Production of the final-specification units was due to begin in 2011.

The Five Day War with Georgia demonstrated that the attack aircraft are very vulnerable when they rely on unguided munitions. Three Su-25 jets were lost, and another four seriously damaged;[36] the figures were much higher than for any other type of combat aircraft used during the campaign. Most of the losses were caused by advanced man-portable SAM systems. Even the upgrades to the Su-25SM specification had failed to provide reliable protection against that type of threat.

If attack aircraft are to remain effective against a well-armed enemy, the Air Force needs to review the tactics of their use and the weaponry they carry. These planes need to be equipped with high-precision or long-range weapons which can be fired without approaching within range of man-portable SAMs. The Air Force also needs new active countermeasures against such weapons, such as the optical and electronic suppression stations that are now being developed.[37]

Another Air Force fleet refresh program is to replace the existing L-39 jet trainers with the newly made Yak-130 aircraft. The Yak-130 trainers are much more advanced compared to the L-39; they can be used to train pilots for the more complex fourth-generation aircraft and, at some point in the future, for the fifth-generation fighters. They can also be fitted with a much wider range of weapons than the obsolete L-39.

The first four mass-produced Yak-130 units out of the 12 the Air Force has bought were delivered to the 4th Combat Training Center in Lipetsk in early 2010. But on May 29, 2010, one of them crashed during a test flight.[38] The cause of the accident was a technical failure; more specifically, it appeared to be the same problem with controls to which one of the prototypes was lost in 2006. As of late 2010, the Yak-130's operated by the Lipetsk training center remained grounded. Further deliveries were suspended until the problem could be fixed. Nevertheless, the Air Force has a real need for this aircraft, and it has been announced that the Yak-130 will be its main trainer model.[39]

Deliveries of the Yak-130 to the Air Force were resumed in early 2011. The first five aircraft entered service with the Borisoglebsk Pilot Training Center, a branch of the Krasnodar Air Force Military Research and Training Center, in April 2011.[40] Another three are to follow before the year's end.

However, the choice of the Yak-130 as the Russian Air Force's main trainer will also cause some problems. To begin with, this is a complex piece of machinery, and it will take a long time even for the instructors to get the hang of it, let alone the trainees. It is also a much heavier plane compared to the L-39, with more powerful engines, and therefore more fuel-hungry. This will increase the cost of one flight hour, and the overall pilot training costs. Another potential problem is properly maintaining the aircraft and keeping it in good working order in the less-than-ideal conditions of the training units. Nevertheless, the arrival of the new trainer has become an important milestone in the Russian Air Force's efforts to bring its training centers up to speed in terms of technology.

In view of all these developments it is safe to say that frontline aviation (including its training units) is now the top priority for the fleet refresh program. That became obvious back in 2009, when the first large deliveries of new aircraft were made. The situation remained unchanged in 2010, when all the new aircraft delivered to the Russian Air Force entered service with frontline aviation units, including three MiG-29SMT aircraft, four Su-27SM3, four Su-30M2, four Su-34 and four Yak-130.[41]

In addition to new aircraft, frontline aviation units have at long last begun to receive advanced new airborne weapons systems. On August 21, 2009 the Air Force signed two-year contracts with the Tactical Weapons Systems Corporation for the delivery of 14 types of munition, worth a total of 6bn roubles, including the RVV-SD, Kh-31 (AS-17), and Kh-35 (AS-20) missiles and other undisclosed weaponry.[42] It seems likely that the Air Force has also bought several initial batches of satellite-guided bombs.

Military Transport Aviation Command

The Military Transport Aviation (MTA) branch of the Russian Air Force has also undergone deep reforms. Several transport air regiments have been disbanded. The newly created Military Transport Aviation Command was left with only four dedicated airbases – albeit large ones – in Tver, Taganrog, Orenburg and Pskov. As part of the second stage of the reform, starting from December 1, 2010 the number of MTA airbases was cut to just one, the 6955th Airbase in Tver. The three others have been subsumed by the Tver base as air groups.

Apart from its traditional remit of providing strategic troops mobility, Military Transport Aviation has been entrusted with a new task. The branch now includes the 2457th AWACS airbase (Ivanovo), which controls all the Russian A-50 AEW&C aircraft. The A-50 uses the platform of the Il-76, the workhorse of Russian military transport aviation. The reformed MTA has also taken over the aircraft of the now-disbanded transport airbases which previously belonged to the former 5th Air Force and Air Defense Army. That includes the search

and rescue aircraft used during landing of Russian space vehicles. As a result, MTA now includes some lighter aircraft such as the An-24 and An-26 transport aircraft, as well as the Mi-8 and Mi-26 transport helicopters.[43]

The Russian AWACS fleet now includes 12 well-maintained A-50 aircraft, which is adequate to the task at hand. Nevertheless, these aircraft would become much more capable if their Soviet-made electronics were to be upgraded using the latest components. One deeply upgraded A-50U aircraft completed the state trials program in 2009. Another aircraft was upgraded to the A-50U specification in 2010, and four more are now in the works.[44]

The upgrades have resulted in major improvements in all the key areas. The A-50U can simultaneously track more targets and guide more fighters. Its radar has an improved range and field of view, better target recognition against the background, and better jamming resistance. Thanks to the use of lighter and smaller components the working conditions for the crew have been improved as well. Even more importantly, the aircraft can now carry more fuel, and therefore stay in the air for longer.

In another departure from its traditional remit, the MTA branch of the Russian Air Force has taken over seven squadrons of the An-2 and An-3T light biplanes, which had previously belonged to the Airborne Troops (VDV). The planes actually remain at their old bases, and are still being used to train paratroopers – but now they are on the MTA books. All the aircraft needed for paratrooper training are now provided solely by the MTA Command.

The more than 100 Il-76 transports now in service make up the bulk of the MTA fleet. The situation is unlikely to change any time soon. The airframes of the existing planes have another 20 or 30 years left in them.[45] The Air Force is planning to buy new Il-476 transports, but no more than a few dozen of them. Their mass production is scheduled for launch in 2014.[46] The MoD is also considering the option of extending the service life of the existing Il-76 fleet by fitting it with the more advanced PS-90A-76 engines.

For now there are no plans to buy any other types of transports for MTA. The programs to develop new light (Il-112V) and medium (An-70) transports, and to resume production of the heavy An-124, have essentially been frozen. There will be no procurement of these aircraft at least until 2015. But the Air Force intends to refurbish and deeply upgrade its entire An-124 fleet[47] (about 20 aircraft).

Long Range Aviation Command

Long Range Aviation has a special status within the Russian Air Force because it is part of the nuclear triad. Carrying strategic nuclear weapons remains its main reason for being. This branch of the Air Force has undergone some restructuring as part of the reform, but it has not actually suffered any cuts. It still includes 15 Tu-160 and 64 Tu-95MS long-range bombers carrying cruise

missiles armed with nuclear warheads. The LRA Command also has dozens of the Tu-22M3 long-range bombers.

In the event of a non-nuclear conflict, efficiency of long-range aviation will be limited by the availability of modern high-precision weapons. During the war with Georgia in 2008 the Tu-22M3 bombers had to resort to dropping free-falling bombs. One of them was lost during such a bombing raid, showcasing the inefficiencies and risks of using these powerful aircraft against an adversary with competent air defenses.

In order to be useful and effective during conventional conflicts, Russia's long-range aviation needs high-precision non-nuclear weapons, especially airborne cruise missiles armed with conventional warheads. One such missile that fits the bill is the new Kh-555, which has a long range and was designed using the nuclear-armed Kh-55 (AS-15) as the prototype (the latter has already entered service with the Tu-160 and Tu-95MS bombers). The Russian defense industry is also developing a new generation of short and medium range cruise missiles. Once these new weapons have been delivered in sufficient numbers, Russia's long range aviation will be able to deliver massive high-precision strikes without approaching within range of the adversary's air defenses.

In low-intensity conflicts it is extremely important for long-range aviation aircraft to be able to use relatively cheap satellite-guided bombs. That will enable the long-range bombers to deliver massive high-precision strikes against distant targets that lie beyond frontline aviation's range.

The much-trumpeted resumption in August 2007 of "regular patrols"[48] by Russian strategic bombers in the Northern hemisphere was in fact nothing more than the resumption of intensive and regular training flights by long-range and strategic bombers, which were suspended in the early 1990s.

The move has enabled Russia's long range aviation pilots rapidly to increase the number of flight hours they clock up each year from 30-40 hours[49] in the mid-2000s to 80-100 hours. With more training and experience, they have also begun to practice more complex scenarios, such as long flights with more than one aerial refueling, coordinated action with fighters and AWACS planes, and tactical (simulated) missile launches.

Russian strategic bombers have also resumed long patrols along their traditional routes over the Northern and Pacific oceans and in the Atlantic. But more exotic routes have been tried as well. In September 2008 a pair of the Tu-160 bombers flew to Venezuela[50], and then made several flights from that country's El Libertador airbase. Russia's Tu-95MS bombers have also visited Southeast Asia, flying all the way to Taiwan, and made several flights over the Indian Ocean.

Russian long-range pilots have also practiced staying in the air for very long hours. Such practice is a good preparation for very long flights and lengthy patrols that may become necessary during a threat period. In 2010 the crew of

a Tu-160 bomber stayed in the air for 23 hours;[51] a Tu-95MS crew broke that record with 40 hours in the air.[52]

Russia's ocean-going navy is weak, and the country lacks a far-flung network of military bases. Strategic bombers armed with high-precision non-nuclear weapons could therefore become the most suitable instrument for Moscow to project power at long distances.

The age of the Russian fleet of strategic and long range bombers is about the same as the age of the frontline aviation fleet. But the lifespan of the heavy and expensive bombers is much longer than that of frontline aircraft; these planes still have many years of service left in them, especially since they had spent 15 years mostly sitting idle up until 2007.

But while their airframes are still in a relatively good condition, the engines are a different matter. Apart from refurbishment programs, the government has been forced to resume production of new engines. In March 2010 the prime minister's office approved a resolution to resume production of the NK-32 turbofan engines for the Tu-160 bombers at the Kuznetsov plant in Samara. First deliveries are expected in 2013; several dozen will be made by 2020.[53] The Russian defense industry has also resumed deep refurbishment programs for other types of engines used in long-range aviation.

The long-range aviation fleet is being upgraded at a fairly rapid pace. Two or three Tu-160 and up to six Tu-95MS bombers undergo repairs and upgrades every year,[54] with serious changes being made to their targeting and navigation systems. They are also being retrofitted to carry new types of weapons. The plan is to have every strategic bomber in the fleet undergo deep refurbishment and upgrade.

In 2008 the Russian Air Force took delivery of one new Tu-160 bomber built using an airframe made back in Soviet times. One or two more may follow, but there are no plans to buy new aircraft in large quantities for the Long Range Aviation Command.

At some point – though not any time soon – the government may choose to go ahead with the PAK-DA (Future Long-Range Aircraft) program. The idea is to replace all the existing strategic bombers with a single type of long-range aircraft. But since the bombers currently in service still have many years left in them, and because of the huge cost of developing a new type of aircraft, the final decision about this program has yet to be made. The work already under way is limited to sketching out the general outlines of the future plane.

The general design and specifications should be ready by 2015. The MoD's requirement is for supersonic cruising, low radar profile and the ability to use non-nuclear high precision weapons in addition to strategic nuclear weapons.[55]

These lofty requirements will mean a completely new design, huge financial costs and a long development time. It cannot be ruled out that by 2015 the government will revise them downwards to make the project simpler and cheaper.

Army Aviation

In late 2010 the MoD announced a radical restructuring of Army Aviation. In 2003 the service was made part of the Air Force, but now it has been subordinated to the Operational Strategic Commands[56], essentially becoming part of the Army once again.

The decision was made after the 2008 conflict with Georgia revealed lack of cohesion between the Air Force and the Army. Coordination between these two completely independent services often had to be channeled via Moscow. That made the chain of command much longer, and substantially slowed decision-making. The problem was especially obvious with helicopter squadrons, which are supposed to work hand in hand with the ground troops.

The functions of Army Aviation now include providing mobility and fire support to ground troops during combat operations. The sole responsibility of the Air Force is to train Army Aviation pilots. It remains to be seen whether such an arrangement is viable.

On December 1, 2010 the helicopter squadrons of Army Aviation, which were previously part of eight different Air Force airbases, were subordinated to the United Strategic Commands.

When the reform began, Army Aviation aircraft were even more battered and decrepit than in the Air Force proper. That was mainly the result of the huge strain put on Army Aviation units by the campaigns in Chechnya and the greater North Caucasus. Apart from the natural wear and tear, those units had suffered heavy losses. Starting from 1999, about 60 Mi-8, Mi-24 and Mi-26 helicopters had been lost in combat and non-combat incidents in the North Caucasus alone.[57] Dozens more sustained serious damage.

As a result, the former North Caucasus Military District was considered the top priority for Army Aviation rearmament programs. That is where most of the upgraded Mi-24PN and Mi-8MTKO helicopters have gone, along with the new Mi-28N attack helicopters.

The campaign in Chechnya revealed an urgent need for an attack helicopter that could be used during nighttime. The MoD responded by upgrading about 28 Mi-24P helicopters to Mi-24PN specification in 2003-2007. Although that upgrade option was not an unqualified success, it gave Army Aviation valuable experience in using helicopters at night, and enabled it better to prepare for the arrival of the more advanced helicopters designed for use day or night; the first few have already entered service.

The first unit to receive the upgraded Mi-24PN helicopters was the 344th Army Aviation Training Center in Torzhok. Then came the turn of the 487th Independent Helicopter Regiment in Budennovsk. Now these helicopters are part of the new Army Aviation airbase, into which the center has been restructured. The MI-24PNs from both Torzhok and Budennovsk saw a lot of

action during the final stages of the counter-terrorism operation in the Chechen Republic. They were also used during the brief military conflict with Georgia in August 2008.[58]

The Mi-24PN was a stopgap solution to tide the troops over until the arrival of more advanced new-generation attack helicopters such as the Mi-28N, Ka-50 and Ka-52. Their development, which began back in Soviet times, the trials program and the subsequent design revisions took many years to complete, owing largely to the lack of financing in the 1990s and early 2000s. The better financial situation in the past several years has enabled the Russian defense industry to launch mass production of these new helicopters and to make first deliveries to the Russian Air Force.

For a long time the prototypes and test units of the new Mi-28N attack helicopter were tested at the 344th Army Aviation Training Center in Torzhok. Mass production began in earnest at the Rostvertol plants in 2009; 12 helicopters were made that year, and another 15 in 2010. Also in 2009 the first final-spec Mi-28N helicopters were delivered to a combat unit, the 487th Independent Helicopter Regiment[59] in Budennovsk. The event was all the more significant since the Mi-28N was the first new helicopter model to enter service with the Russian Armed Forces since the fall of the Soviet Union.

In 2009-2010 the 487th regiment (which has now become an airbase) took delivery of at least 16 final-spec Mi-28N units. But that does not mean that the regiment is ready to make the full use of them in combat. The pilots are only just beginning to get the hang of the new machines. They will have to be trained in using the full range of weaponry the helicopter can carry, and in operating it any time of day or night. Nevertheless, the training program has already made great progress, with the help of specialists from Rostvertol and the 344th Center. Training was especially intense in the summer of 2010, when a squadron of the Mi-28Ns was relocated to a firing range on several occasions to practice group firing.[60]

In October 2010 deliveries of the Mi-28N began to the 393rd Airbase in Korenovsk (the former 55th Independent Helicopter Regiment).[61] As a result, two airbases of the Southern Military District now have the new helicopters. The decision to begin deliveries to the 393rd Airbase, even though not all the helicopters in Budennovsk had yet been replaced, was probably dictated by the need to speed up the rollout of the new Mi-28N across the armed forces. As Rostvertol delivers more units to the MoD, they can be deployed at either of the two bases. Both will already have pilots and technicians trained in using and maintaining the Mi-28N.

The MoD intends to buy 10-15 of the new helicopters every year.[62] Contracts for a total of 97 units have already been signed with Rostvertol, for delivery by 2015. By the end of 2010, 38 final-spec Mi-28N units had been built, not counting the

two prototypes. Plans have been announced to buy over 300 such helicopters in the longer time frame[63], including the new and improved Mi-28NM version. That would enable the armed forces completely to replace the existing Mi-24 fleet.

Meanwhile, the MoD continues to buy other types of attack helicopters. In a somewhat unexpected move, it has announced that the new Ka-52, a long-standing competitor of the Mi-28N project, will also enter service. It appears that the decision was based not only on the needs of the armed forces, but some other considerations as well. The large Ka-52 contract has been a lifeline for the manufacturer, the Progress company, on which the economy of the entire Far Eastern town of Arsenyev depends. The company has also landed a contract to finish several one-seater Ka-50 helicopters that were sitting half-built in its warehouses. That too seems to have been part of the government's efforts to keep Progress afloat, since there are no plans to buy any more of the Ka-50's.

About 25 final-spec Ka-52A units are to be built by 2012.[64] The initial batch of six pre-mass-production units were made in 2009. In late December 2010 the first four final-spec units were delivered to the 344th Army Aviation Training Center in Torzhok. The next ones will enter service with one of the Far Eastern army aviation bases; pilot training there has already begun. Once all the deliveries under the current contract have been made, the Russian Army Aviation will have about 36 Ka-52A helicopters, including the final-spec and pre-mass-production units. No information is available on any future plans.

In 2010 the MoD announced that it had signed a contract for 22 newly-built Mi-35M attack helicopters for the Air Force.[65] This is a deeply upgraded export version of the Mi-24, which had previously been sold to Venezuela and Brazil. It is substantially more capable than all the existing Mi-24 versions currently in service with the Russian Air Force, including the Mi-24PN – but it is still cheaper than the Mi-28N. The value of the contract is 10-12bn roubles; final deliveries are to be made by 2015. It cannot be ruled out that an additional batch of the Mi-35M will be ordered for delivery in 2015-2020. As of April 2011, the first six Mi-35M's were in the final stages of assembly at Rostvertol.[66] Their delivery to one of the Army Aviation units can be expected in 2012.

Apart from attack helicopters, the MoD has announced and is already implementing plans to buy transport helicopters for Army Aviation. The largest contract so far was signed in early 2010 for 22 Mi-8AMTSh transport and assault helicopters[67], which are to enter service with the Korenovsk and Budennovsk airbases. In 2009-2010 the MoD also signed several contracts for small batches and single units of the Mi-8AMTSh and the Mi-8MTV-5. Deliveries under those contracts have already commenced. Ten Mi-8AMTSh helicopters assembled at the Ulan-Ude helicopter plant were delivered in late December 2010[68] to the 393rd Airbase in Korenovsk. Several hundred Mi-8 transports will be bought for Army Aviation by 2020.

The Mi-8 is not the only transport helicopter the MoD wants to buy. In 2009 Defense Minister Anatoliy Serdyukov said that at least two Mi-26 helicopters will be bought every year for the Russian Air Force. The first four Mi-26 helicopters under this Air Force contract are already being assembled by Rostvertol. Initially they will be delivered in standard configuration that is already being used by Army Aviation. But at some point the company hopes to interest the MoD in the more advanced Mi-26T2 version, once it has completed the trials and certification program.

In 2010 the Russian Armed Forces took delivery of the first new Ansat-U helicopters. These light machines, with a maximum take-off weight of up to three and a half tons, are to replace the venerable Mi-2 as the Air Force's main training helicopter. The first three helicopters have been delivered to the 344th Army Aviation Training Center.[69] Five were sent in October 2010 to the higher military aviation school in Syzran. Another seven will follow before the end of 2011.[70] The Ansat-U, with its far more advanced instruments compared to the old Mi-2, will make a significant contribution to bringing the Russian helicopter pilot training programs up to date.

Compared to the previous years, when the Russian Army Aviation had no new helicopter deliveries, the procurement programs of the past couple of years seem impressive. Nevertheless, they are too small to replace even the combat and non-combat losses of Army Aviation transport helicopters over the past decade, let alone refresh the ageing fleet. Besides, most of the new transport and attack helicopters are entering service in the Southern Military District. The other districts have to rely on the ageing Soviet fleet.

But the procurement programs of 2009-2010 are supposed to be just the beginning of a massive fleet refresh. The plan is to buy about 400 new attack, military-transport and training helicopters for the Russian Army Aviation by 2015, including the Mi-8 family transports and the Mi-28N and Ka-52 attack helicopters.[71] In May 2011 the MoD announced the signing of three long-term contracts with the Vertolety Rossii (Russian Helicopters) company for delivery in 2011-2018.[72] The numbers and other details have not been disclosed, but the plan is to buy about 1,000 helicopters by 2020.

These grand procurement plans spell a bright future for Army Aviation. Its numerical strength will actually increase. In addition to the eight Air Force airbases that have now been transferred to Army Aviation control, five more will be created, making a total of 14.[73] The MoD is also likely to give the go-ahead to the plans to equip airborne assault brigades and GRU special task forces with their own helicopters.

SAM Troops and Radar Troops

Russia's Air Defense force is the direct successor of the former Soviet Union's extremely capable air defenses. Since the fall of the Soviet Union it has undergone

several rounds of reform, and in 1998 it was made part of the Russian Air Force. But despite the cuts of the previous years, the Russian Air Force's SAM Troops still remain the world's most powerful land-based air defense force.

As part of the ongoing reform, all the existing regiments of SAM and radar troops have become permanent combat readiness units; they are now part of the 13 newly created aerospace defense brigades. Structurally these brigades consist of SAM regiments and radar regiments.[74]

Back in 2007 all the SAM brigades armed with the S-300V (SA-12) SAM systems, and some brigades armed with the Buk (SA-11 and SA-17) SAM were transferred from the Army to the Air Force. During the later rounds of reform seven of those brigades became SAM regiments, and another two were disbanded. Most of the Buk systems are still being operated by the Army. The plan was that after the reform, the Russian Air Force should have 45 SAM regiments (including the seven that used to be the Army's SAM brigades). The radar regiments and brigades, whose task it is to monitor the Russian airspace, were reformatted to become 18 radar regiments, which are now part of the aerospace defense brigades. In 2009 the MoD retired much of the old and obsolete hardware that was operated by the SAM and radar regiments.[75]

After the transition of the Air Force and Air Defense SAM units to permanent combat readiness status the MoD ramped up their combat training programs. The regiments now conduct live firing exercises using a variety of targets, and regularly redeploy over large distances for training purposes. The Far Eastern SAM regiments probably hold the current training record, with 40-50 live firing exercises each year,[76] which is a lot even by Soviet standards.

Most of the Russian Air Force's SAM units are armed with the S-300PS and S-300PM (SA-10B) and S-300PM1/2 (SA-20) SAM systems. They also operate a few S-300V and Buk systems transferred from the Army. Some units have begun to take delivery of the latest S-400 (SA-21) SAM systems and Pantsir-S (SA-22) gun-missiles systems. The S-400, which is the successor of the S-300, entered service with the Air Force and Air Defense units in 2007. But efforts to ramp up mass production of these SAM systems have run into serious trouble. As of early 2011, only four S-400 battalions, with eight launchers per battalion, had been delivered to the Air Force.[77] They have entered service with two regiments covering the Moscow airspace: the 210th SAM Regiment in Dmitrov and the 606th SAM Regiment in Elektrostal. For now, these new battalions are armed with the same old missiles used for the S-300PM2 systems. Development and testing of new missiles for the S-400, including the long-range (up to 400km) 40N6, is still under way. That new missile was supposed to complete the state trials program by the end of 2010,[78] but as of early 2011 the trials were still ongoing. Once the new missiles enter service and mass production, the S-400 regiments, which are still using the old ones, will be rearmed.

Under the current S-400 rollout plan, by 2016 the new system will replace the S-300 in four regiments around Moscow. The MoD has also announced plans to station one of the first S-400 regiments in the Far East.

Under the 2020 state armament program, the MoD intends to procure 56 battalions (28 regiments) of the S-400 systems and 10 battalions (5 regiments) of the new S-500 SAM/ABM systems. That would be enough for an almost complete technology refresh in the Russian air defense service.

For now, the "space" part in the "Aerospace Defence Brigades" is a statement of aspiration rather than fact. In truth, the S-300 and S-400 SAM systems currently in service cannot intercept targets even in near space. Only the S-500, which is still in development, has that capability. It will be a mobile strategic missile defense system capable of intercepting short and medium range missiles, targets in near space[79] and hypersonic targets. But first deliveries are not expected before 2016. Even by the most optimistic forecasts, less than half of Russia's aerospace defense brigades will have a single S-500 battalion by 2020. They will still be armed predominantly with the S-400, which is designed to defend against targets in the atmosphere. Nevertheless, it cannot be ruled out that the S-400 systems will at some point be rearmed with new missiles capable of intercepting targets in near space.

Russia's long-range air defense systems, such as the S-400 and S-500, will be a priority target for any adversary trying to achieve air superiority. And it would be a waste to use their expensive missiles to defend those systems themselves rather than to intercept the adversary's aircraft. That is why the MoD is now experimenting with the joint use of the long-range SAMs in tandem with short-range systems – the latter are supposed to defend the former against the adversary's high-precision weapons and radar-seeking missiles.

The Air Force is now trying out the latest Pantsir-S system[80] for the role of the short-range component in that tandem. First deliveries of those systems were made in 2010. They have been used on several occasions in combination with the S-300 and S-400 regiments during exercises at the Ashuluk test and training range.[81] Starting from the spring of 2011 such mixed short and long range battalions will be formed in both regiments armed with the S-400.[82] At some point in the future the role of the short-range component can be played by the specialized multi-channel short-range systems that are now being developed. They will be a better match for the task of defending the long-range SAMs against massive high-precision weapon strikes.

Apart from the new short and long range systems, the Russian defense industry is also developing medium range SAMs. Such an earnest R&D and procurement effort will enable the Russian SAM Troops to remain a formidable component of national defenses for a long time to come.

Meanwhile, the radar units of the Russian Air Force and Air Defense have been somewhat "forgotten". The pace of technology refresh in this area has been

very sluggish; in the past five years only about 70 new or upgraded radar stations have entered service, and 80 or so automation systems.[83] But under the 2020 rearmament program procurement for the radar service should be stepped up.

For all the impressive capabilities of the Russian SAM troops, it is important to realize that they can cover only a small part of Russia's vast territory. The SAM regiments are concentrated mainly around Moscow, forming an unbroken ring around the capital, and near some strategic facilities on the Russian borders, in the south, northwest and the Far East of the country. Meanwhile, huge swathes of Siberia and the North do not have any SAM defenses and are not even covered by an unbroken radar field. Unfortunately, such a situation is unlikely to change any time soon. In their current shape, the Russian SAM troops can be an effective shield only when used in combination with the mobile air defense component, i.e. fighter aviation.

Conclusion

In view of the growing role of air power in modern warfare it is very important for the Russian Air Force to remain competitive. Without air superiority or at least air parity, using all the other armed services (with the possible exception of Strategic Missile Troops) will be very difficult. That understanding has forced the Russian military planners to focus the MoD’s still limited procurement budget on two key areas: aviation and the Strategic Missile Troops. In doing so the MoD has had to trim down the procurement programs for the ground troops for the period until 2015.

More than 500 new helicopters and aircraft are to be delivered to the Russian Air Force and Army Aviation in 2010-2015. Their fleet will be refreshed by 30 per cent, on average. Even more procurement spending is planned for the five-year period after 2015. The target is to refresh 80 per cent of the current Air Force fleet by 2020.[84] The SAM troops are also in for a rapid rearmament program. Unfortunately, past experience suggests that optimistic targets should be taken with a pinch of salt. Plans for the five years to 2015 are already set and are unlikely to be revised downwards. But whether the targets for 2015-2020 are realistic still remains to be seen; the answer to that question will become clear a few years down the line.

All the new weaponry will take many years properly to enter into service. In the meantime, it will be important to maintain the existing fleet and arsenals in good working order. The new airbases and aerospace defense brigades must be “permanent combat readiness” units in truth, not just in name. That will only be possible if this program is given as much financing as the new procurement effort. After all the radical transformations, the new airbases must not be allowed to end up the same way their predecessors the air regiments did, i.e. to have a lot fewer combat-ready aircraft than they are supposed to have on paper.

Now that the number of the Air Force's airfields has been slashed, many of the remaining ones are separated by very long distances. That will hamper proper coordination between the airbases, and each base will now have to cover a much larger swathe of Russian territory. One way of addressing this is to resume aerial refueling training for frontline aviation pilots. Such tactics are already being used in the Far East for the Su-24M bombers.[85] Also, the scenario of the Vostok 2010 exercise included non-stop flights of several Su-24M and Su-34 aircraft from the European part of Russia to the Far East using aerial refueling.

But refueling in the air is a complex skill which requires the pilots to have many flight hours under their belt. The current target across the Air Force is 100 hours per year. If that is achieved, aerial refueling training will become doable. Another obstacle, however, is the severe shortage of aerial refueling tankers. There are not enough of them even for the regular Long Range Aviation patrols, which are now the primary user of aerial refueling services. With the arrival of new frontline aviation aircraft capable of refueling in the air, such as the MiG-29SMT, the Su-34 and the Su-35, that shortage is only going to become worse. Unfortunately, there are no plans for now to increase the number of flying tankers in service – even though they could substantially broaden the capabilities of both long-range and frontline aviation.

Naturally, neither should the MoD forget about arming its new aircraft with the latest airborne weaponry, increasing the proportion of high-precision weapons in service, and developing new types of airborne munitions. Now that there are far fewer aircraft and helicopters left in service following the reform, the remaining ones must be used efficiently. That cannot be done using old Soviet stocks of unguided munitions. The Air Force requires a large munitions procurement program to enable routine live firing training for the Russian pilots and to have large enough stocks available in case they are needed during a serious military conflict. So far, no plans have been announced for such a procurement program.

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Reform of the Russian Navy

Dmitry Boltenkov

The Russian Navy has not been left on the sidelines of the overall military reform – but for now, news from that front have been somewhat overshadowed by the radical transformations in the other armed services, receiving scant media coverage.

Meanwhile, the "New Look" reform of the Navy and of the rest of the Russian Armed Forces entered a new stage in 2010. The most important change implemented during that stage so far has been the MoD's decision to set up the four new Operational Strategic Commands (i.e. the new Military Districts): the Western, Central, Southern and Eastern. The Navy's combat units will now take orders from these new Military Districts (apart from the Central, which does not have any strength at sea), rather than from the Navy Command. But the key reorganization steps at the level of the Navy Fleets and below have yet to be implemented.

Main priorities of Navy reform

When the New Look reforms were rolled out in 2008, they aimed to:

- Optimize the organizational and personnel structure of the Russian Navy, radically reduce the headcount at the command structures, and abolish or downgrade the status of many command bodies and auxiliary units;

- Bring the Navy's coastal units and ground troops to permanent combat readiness status; redistribute the armed strength to reflect the changing nature of threats; restore conscription to the Navy, which was previously being phased out in favor of professional service;
- Merge Naval Aviation forces into airbases and transfer some of the units to the Russian Air Force. An airbase includes combat units and support and logistics services (communications and radar units, arsenals, etc) within a single chain of command;
- Create new Commands within the Navy (i.e. new command structures)
- Reform the logistics and supply services:
- Create universal supply depots (USD) and arms depots; subordinate logistics and supply services to a single command; increase the number of civilian contractors in non-combat services. The USDs keep the combat units supplied with fuel, food, various provisions and non-combat equipment.
- Subordinating the Navy's forces to the newly created Operational Strategic Commands (the new Military Districts).

The reform has also affected the Navy's training system, its Main Command, the centrally-commanded units, and the supply and logistics system.

Another goal of the reform is to prepare the Navy for a big rearmament program, including the replacement of its old ships. The government is now finalizing the 2011-2020 State Armament Program, which will put an emphasis on building new ships.

The current state of the Russian Navy and the progress of the reforms are best discussed individually for each of its constituent Navy Fleets.

The Black Sea Fleet

The Black Sea Fleet is slated for the Navy's most ambitious rearmament program.

As of 2008, the fleet comprised the 30th Division of surface ships (which included the 11th Anti-Submarine Ships Brigade and the 197th Landing Ships Brigade), the 41st Missile Craft Brigade, the 68th Sea Area Patrol Brigade, the 247th Submarine Division (not *Diviziya*, but *Division,* i.e. detachment) , plus the Novorossiysk Naval Base (with its core ship formation, the 184th Sea Area Patrol Brigade).

The Black Sea Fleet's coastal defense troops included the 11th Independent Missile Artillery Coastal Defense Brigade, the 810th Marines Regiment, the 382nd Independent Marines Battalion, and the 1096th Independent SAM Regiment. The fleet's aviation strength consisted of the 43rd Independent Naval Attack Aviation Regiment (Su-24 and Su-24MR aircraft), the 317th Independent Mixed Aviation Regiment, and the 25th Independent Anti-Submarine Helicopter Regiment.

The distinguishing feature of the Black Sea Fleet is that the bulk of it is based on the territory of a foreign country, Ukraine, in the port of Sebastopol and other parts of the Crimea. The previous Ukrainian government hindered the fleet's development and normal operation; indeed, it even considered early termination of the lease agreement. But following the arrival of a new government in Kiev, the Kremlin managed to resolve this problem by signing an agreement in the spring of 2010 on extending the lease of the Black Sea Fleet's bases in the Crimea until 2042. That has enabled Russia to start making plans for strengthening the fleet and bringing in new ships.

The Black Sea Fleet's ships and the fleet refresh program

Most of the Black Sea Fleet's ships are old and obsolete. The bulk of them are second-generation projects. Nevertheless, they are being maintained in good working order.

11th Anti-Submarine Ships Brigade includes:

- *Moskva* guided missile cruiser, a Project 1164, commissioned in 1983;
- *Kerch* large anti-submarine ship, a Project 1134B, commissioned in 1974;
- *Ladny* (Project 1135, comissioned in 1980), *Pytlivyy* (Project 1135M, commissioned in 1981) and *Smetlivyy* (upgraded Project 61, commissioned in 1969) frigates;
- *Ochakov* (Project 1134B, commissioned in 1973) is still on the Black Sea Fleet's balance books, but it has long been assigned non-combat status and never puts to sea.

The Black Sea Fleet's 197th Landing Ships Brigade includes seven large tank landing ships (four of Project 775 and three of the old Project 1171). The Black Sea Fleet currently operates more landing ships than any other fleet of the Russian Navy.

But the fleet has only one operational submarine, the diesel-electric *Alrosa*, a Project 877V sub which entered service in 1990. The fleet's only other sub, the B-380 of the old Project 641B design (entered service in 1973) has been under repairs for a long time. It is not clear whether and when these repairs will be completed.

The fleet also includes nine guided missile light corvettes, seven anti-submarine corvettes, and nine ocean and coastal minesweepers, including *Valentin Pikul* and *Vice-Admiral Zakharyn*, both completed after 2000.

In 2010 the Russian government announced an ambitious rearmament program for the Black Sea Fleet. The initial plan was for 15 new large ships (nine frigates and six conventional submarines)[1] to enter service with the fleet by 2020. In October 2010 it was reported that the fleet will receive 18 new ships by 2020, including six new frigates of the upgraded Project 11356M (Modified

Talwar class), six Project 06363 (Kilo class) diesel-electric submarines, and two Project 11711 large tank landing ships, with the first of these ships expected to enter service in 2013-2014.[2] In 2010 the Yantar shipyards laid down the first upgraded Project 11356M frigate *(Admiral Grigorovich),* while the Admiralty shipyards laid down the first Project 06363 submarine (*Novorossiysk).*

The second new Project 22350 frigate, *Admiral Flota Kasatonov*, probably is expected to enter service with the Black Sea Fleet since 2015.[3]

The Black Sea Fleet shipbuilding program is the most ambitious in the whole 20-year post-Soviet history of the Russian Navy.

The fleet is also likely to receive several new Project 21631 guided missile light corvettes. The first in the series, *Grad Sviyazhsk*, was laid down at the Zelenodolskiy shipyards in 2010. In addition, the MoD is planning to assign to the Black Sea Fleet two of the existing Project 11540 frigates now in service with the Baltic Fleet, *Neustrashimyy* and *Yaroslav Mudryy*.[4]

It has also been reported that an upgraded diesel-electric sub now serving with the Northern Fleet will be assigned to the Black Sea Fleet – as will *Sevastopol*, a submarine of the new Project 677 series now being built. The fleet's naval aviation units are also slated for a refresh program; the existing Su-24 tactical bombers will be replaced with the upgraded Su-24M, and the old Be-12 ASW aircraft with the more capable Il-38 aircraft.[5]

Reform of the Black Sea Fleet

As part of the reform program, the Black Sea Fleet's 810th Marines Regiment once again became the 810th Marines Brigade starting from December 1, 2008.[6] The 11th Independent Rocket Artillery Coastal Defense Brigade (created in 2005) became the first Russian Navy unit to be armed with the new-generation Bastion-P (SSC-5) and Bal (SSC-6) mobile coastal defense anti-ship missile systems, as well as the Bereg 130mm mobile coastal defense artillery systems.[7]

In line with the overall reform of the Russian air force and air defense forces, the Black Sea Fleet's aviation units have been merged into the 7057th Airbase (combined) at the Kacha airfield and the 7058th Airbase (attack aircraft) at the Gvardeyskoye airfield. However, both airbases remain part of the Black Sea Fleet.[8]

As part of the overall reform strategy, in October 2010 the Black Sea Fleet and the Caspian Flotilla became part of the new Southern Military District (Southern Operational Strategic Command), which also subsumed the 4th Air Force and Air Defense Command and the former North Caucasus Military District.[9] As a result, the Black Sea Fleet and the Caspian Flotilla now take orders from the HQ of the new Military District, where a separate naval department is now being set up. It is expected that the new Naval Operational Command of the Southern Military District will be in place by 2012.

The Black Sea Fleet's 30th Surface Ships Division will probably become the core of the new Overseas Operational Command. The 41st Missile Craft Brigade and the 68th and 184th Area Patrol Ships Brigade will be subsumed into the new Black Sea Command.[10] The 247th Submarine Division will probably become a brigade once the new submarines enter service with the fleet.

The government is now implementing a federal program to build naval infrastructure along the Black Sea coast, including the port of Novorossiysk. Some 92bn roubles is expected to be spent on the program by 2020.[11] It includes an upgrade of the Russian Navy's supply station in the Syrian port of Tartus[12]. Some media reports have suggested that new Russian naval bases may appear on the territory of other countries.[13]

On the whole, Russian naval presence in the Mediterranean is set to increase, and at some point in the future the Black Sea Fleet will take over responsibility for Russia's participation in the anti-piracy operation in the Indian Ocean.

The Caspian Flotilla

In 2008 the Caspian Flotilla comprised the 73rd and 106th Sea Area Patrol Brigades and the 77th Guard Marines Brigade.

The flotilla operates several types of ships built especially for it or transferred from other fleets. The flagship is *Tatarstan* guided missile light frigate, commissioned in 2001 using the hull of a Project 11611 ship previously destined for export. Another ship of the same series, *Dagestan*, is still under construction. Its launch has been delayed because the ship is being adapted to carry the Kalibr (SS-N-27) advanced missile system, and the new launch deadline remains uncertain.[14]

Astrakhan, a small gunboat delivered in 2006, remains the only Project 21630 ship now in service with the Russian Navy. Its two sister ships, *Makhachkala* and *Volgodonsk*, are sitting nearly completed at the Almaz shipyards, and comission on 2011-2012 only. In 2010 the Russian shipbuilders laid down the first of a series of Project 21631 guided missile light corvettes; the design is a missile-carrying modification of Project 21630. It has already been announced that the first ship of the series, *Grad Sviyazhsk*, will be assigned to the Caspian Flotilla.

The flotilla also has about twenty smaller ships (coastal and harbor minesweepers, fast-attack missile and artillery craft, assault landing craft, etc.)[15]

In early 2010 it was reported that the MoD had decided to procure new ships and boats for the Caspian Flotilla instead of trying to repair the hopelessly obsolete ones already in service.[16]

Reform of the Caspian Flotilla

The most radical step so far has been the decision to disband the command of the 77th Guard Marines Brigade, which had consisted of two independent

marines battalions, one based in Astrakhan, the other in Kaspiysk. The Brigade's personnel have joined the strength of the Black Sea Fleet's 810th Marines Brigade.[17] The two battalions and other combat units of the Caspian flotilla have become permanent combat readiness units.[18]

Several of the flotilla's units were restructured and/or relocated in 2009-2010. The 250th Missile Craft Squadron has been transferred from Astrakhan to Kaspiysk. The command of the 106th Sea Area Patrol Brigade, along with the brigade's other units, have also been transferred to Kaspiysk from Makhachkala.[19]

In late 2010 the MoD announced a contract for the one Bal mobile coastal anti-ship missile system, to be assigned to the 847th Independent Coastal Defense Missile Battalion. Judging from the terms of delivery, the battery will also be based in Kaspiysk.[20]

The Caspian Flotilla has been subordinated to the newly created Southern Military District, and takes orders from its commander. By 2012 the flotilla will be transformed into the Caspian Operational Naval Command. The flotilla's marines units will probably become part of the Southern Military District's Coastal Troops Command.[21]

As a result, the future composition of the Caspian Flotilla will probably include two Project 11611 guided missile light frigates and five Project 21631 guided missile light corvettes, armed with the Kalibr missile system, as well as three Project 21630 small gunboats.

The Baltic Fleet

In 2008 the Baltic Fleet included:

- 12th Surface Ships Division (consisting of the 128th Surface Ships Brigade and the 71st Landing Ships Brigade);
- 123rd Submarines Brigade;
- Baltic Naval Base (consisting of the 36th Missile Ships Brigade, the 64th Area Patrol Ships Brigade and the 25th Coastal Missile Regiment);
- Leningrad Naval Base (consisting of the 105th Area Patrol Ships Brigade and the 13th Brigade, made up of ships being built or repaired).

The Baltic Fleet's coastal and ground forces stationed in Kaliningrad Region included the 336th Independent Guard Marines Brigade, the 7th and the 79th Independent Motorised Rifle Brigades, and other units. The fleet's air strength consisted of the 4th Independent Guard Naval Attack Aviation Regiment (equipped with the Su-24M and Su-24MR aircraft), the 689th Guard Fighter Aviation Regiment (Su-27 fighters) and several independent squadrons.

The main ships of the Baltic Fleet are two Project 956 fleet destroyers, *Nastoychivyy* and *Bespokoynyy*. Both were commissioned in the early 1990s and assigned to the Baltic Fleet, which had no large surface ships left at the time. In

addition, the fleet has two relatively modern Project 11540 frigates, *Neustrashimyy* and *Yaroslav Mudryy*, commissioned in 1993 and 2009, respectively. But both will be transferred to the Black Sea Fleet later in 2011-2012.[22] Up until recently the Baltic Fleet also had two obsolete Project 1135 frigates, *Pylkiy* (commissioned in 1978) and *Neukrotimyy* (decommissioned in 2009).

New *Steregushchiy* corvette, the first ship of the Project 20380 series, joined the Baltic Fleet in 2008. In 2011 the fleet will also receive the second corvette built to modified Project 20381 specifications, *Soobrazitelnyy*.[23] The third and the fourth ships in the series, *Stoykiy* and *Boykiy*, have already been laid down at the Severnaya shipyards.[24]

The Baltic Fleet has four Project 775 large tank landing ships and two Project 12322 Zubr small air cushioned landing ships. It also has 11 guided missile light corvettes, seven anti-submarine corvettes and about 14 coastal and harbor minesweepers.[25]

The fleet has three diesel-electric submarines: *St Petersburg* (the first sub of the new Project 677 series delivered to the Russian Navy in 2010) and two Project 877 (Kilo class) boats.

Reform of the Baltic Fleet

The coastal and ground troops stationed in Kaliningrad Region were the first component of the Baltic Fleet to undergo transformations. They were reorganized and all the remaining units have been brought up to their full wartime strength – although the 7th Motor Rifle Brigade has been downsized to become a regiment. At present, the Baltic Fleet's coastal and ground forces include: the 336th Independent Guard Marines Brigade, the 79th Independent Motor Rifle Brigade, the 7th Independent Motor Rifle Regiment, the 244th Artillery Brigade and the 152nd Missile Brigade. The armed strength stationed in Kaliningrad Region is roughly on par with the old Leningrad or Volga-Urals Military Districts.[26]

The reform of the Baltic Fleet's air force and air defense forces took a rather interesting turn. The initial plan was that both of the fleet's air regiments and all of its air defense SAM units should be transferred to the newly-created 1st Air Force and Air Defense Command; they would no longer be part of the Baltic Fleet. The fleet's remaining air strength was to be merged into two airbases. But those plans were adjusted, and all the aforementioned air force and air defense units remain part of the Baltic Fleet. Its air strength has been merged into just one airbase (based at Chkalovskiy, with three secondary airfields),[27] while all air defense units have become part of the fleet's 3rd Aerospace Defense Brigade.[28] Not a single one of the Russian Navy's aviation units has been transferred to the Russian Air Force and Air Defense.

In December 2008 the 123rd Submarine Division (detachment) was restructured to become the 123rd Submarine Brigade.[29] A number of the Baltic Fleet's auxiliary support and logistics units have been downsized or disbanded.

At present the Baltic Fleet, the Northern Fleet, the 1st Air Force and Air Defense Command, and the former Moscow and Leningrad Military Districts are part of the newly created Western Military District (Western Operational Strategic Command).[30] At some point in the future the Baltic Fleet's 12th Surface Ships Division may become the core of the future North Atlantic Operational Command.

Northern Fleet

In 2008 the Northern Fleet included:

- 43rd Missile Ships Division;
- Kola Flotilla, which consisted of:
  - 2nd Anti-Submarine Ships Division,
  - 121st Assault Landing Ships Division (detachment),
  - 161st Submarine Division (detachment),
  - 7th Area Patrol Ships Division (detachment),
  - 5th Minesweepers Division (detachment);
- White Sea Naval Base, which consisted of:
  - 43rd Area Patrol Ships Division (detachment),
  - 16th Brigade of ships under repairs,
  - 339th Brigade of submarines being built or repaired;
- 11th Submarine Squadron
  - 7th, 11th and 18th Submarine Divisions (Diviziya);
- 12th Submarine Squadron
  - 24th and 31st Submarine Divisions (Diviziya).

The Northern Fleet's air strength consisted of:

- 924th Independent Guard Naval Missile Aviation Regiment (Tu-22M3 aircraft);
- 279th Independent Shipboard Fighter Aviation Regiment (Su-33 carrier-based fighters);
- 403rd Independent Mixed Aviation Regiment;
- 830th Independent Anti-Submarine Naval Helicopter Regiment;
- 73rd Independent Anti-Submarine Aviation Squadron (Tu-142M3 and Tu-142MR aircraft).

The fleet's coastal troops included the 61st Marines Brigade and the 536th Independent Coastal Missile Artillery Brigade.

In 2009 the Northern Fleet decommissioned *Borisoglebsk*, its last Project 667BDR (Delta III class) strategic nuclear-powered ballistic missile submarine (SSBN). Six of the remaining Project 667BDRM (Delta IV class) SSBN subs, commissioned in 1985-1992, underwent mid-life repairs and upgrades in 1994-

2010; the last to be upgraded, *Novomoskovsk*, is nearly finished. This mid-life repair and upgrade program has probably been the Russian Navy's only one to have been financed properly in the past 15 years. The Project 667BDRM subs are also being rearmed with the R-29RMU2 Sineva (SS-N-23 Mod) SLBM. The second cycle of mid-life repairs and life extension for all Project 667BDRM submarines began in 2010, when *Verkhoturye* arrived at the Zvezdochka shipyards.[31]

The Northern Fleet also operates 17 Project 949A, 971, 945 and 671RTM nuclear-powered cruise missile (SSGN) and attack (SSN) submarines. It was recently reported that *Voronezh*, a Project 949A (Oscar II class) SSGN submarine, will soon become operational after "restoration of its technical readiness", i.e. minor repairs and maintenance. Other subs that have recently been repaired include *Kostroma*, a Project 945 (Sierra I class) SSN sub; *Nizhniy Novgorod* (Project 945A – Sierra II class); and *Pantera* (Project 971 – Akula class) SSNs. On the whole, prospects for the mid-life repairs of third-generation nuclear-powered subs are not very optimistic. Most of these repairs are "restoration of technical readiness" as opposed to proper mid-life repairs and upgrades, so they extend the submarine's service life by only three to five years. Nevertheless, the repair and upgrade programs undertaken in recent years have enabled the Northern Fleet to step up its activities. It has been reported, for example, that *Nizhniy Novgorod*[32], and *Gepard* and *Tigr*[33] (both Akula class) attack submarines all performed combat duties in 2009.

Uncertainty remains over the future of two old Project 941 (Typhoon class) heavy SSBN subs, *Arkhangelsk* and *Severstal*, which officially remain part of the Northern Fleet's combat strength. The Navy Command has said that it wants to keep the two subs until 2019 – but it is not clear in what shape or form they will continue their service. It looks very unlikely that they will ever become operational again.[34]

The Northern Fleet also has seven Project 877 (Kilo class) diesel-electric subs. Two of them, *Kaluga* and *Vladikavkaz*, are awaiting or undergoing mid-life repairs at the Zvezdochka shipyards.[35]

Nominally the Northern Fleet has 13 large surface ships:

- *Admiral Flota Sovetskogo Soyuza Kuznetsov*, a Project 11435 heavy aircraft carrying cruiser, commissioned in 1990;
- two Project 11442 nuclear-powered guided missile battlecruisers, *Petr Velikiy* and *Admiral Nakhimov*, commissioned in 1998 and 1988, respectively;
- *Marshal Ustinov*, a Project 1164 guided missile cruiser, commissioned in 1986;
- four Project 1155 large anti-submarine ships (*Vice-Admiral Kulakov*, *Admiral Levchenko*, *Severomorsk* and *Admiral Kharlamov*) and one Project 11551 large anti-submarine ship (*Admiral Chabanenko*);
- four Project 956 fleet destroyers (*Admiral Ushakov*, *Bezuderzhnyy*, *Rastoropnyy* and *Gremyashchiy).*

The ships actually in service include:

- *Admiral Flota Sovetskogo Soyuza Kuznetsov* aircraft carrier;
- *Petr Velikiy* and *Marshal Ustinov* guided missile cruisers;
- *Admiral Chabanenko*, *Severomorsk* and *Admiral Levchenko* large anti-submarine ships, plus *Vice-Admiral Kulakov*, which went operational in 2010 after almost 20 years of repairs.

Rastoropnyy, *Gremyashchiy* and *Bezuderzhnyy* destroyers are out of service and it is not clear whether or when they might be repaired.

Neither is it clear when *Admiral Nakhimov* might be back in service. The heavy nuclear-powered guided missile battlecruiser is undergoing repairs and upgrades at the Sevmash shipyards. The *Admiral Ushakov* (ex-*Kirov*), the first ship in the series to which *Admiral Nakhimov* belongs, has already been decommissioned. It is hard to take seriously the reports claiming that all four of the Project 1144 nuclear-powered battlecruisers will be recommissioned.[36]

Meanwhile, the Northern Fleet's two largest operational ships, *Admiral Flota Sovetskogo Soyuza Kuznetsov* aircraft carrier and *Petr Velikiy* battlecruiser, are expected to be taken out of service for mid-life repairs in the next few years. That will reduce the fleet's fighting ability even further.

The fleet also has four Project 775 large tank landing ships, three guided missile light corvettes, four anti-submarine corvettes, four ocean minesweepers and six coastal minesweepers.

The Northern Fleet's largest procurement programs include the delivery of new Project 885 nuclear-powered attack submarines and new Project 22350 frigates. The first ships of both classes, *Severodvinsk* and *Admiral Flota Sovetskogo Soyuza Gorshkov*, were launched in 2010, and the Navy has already taken delivery of *Severodvinsk* SSN. It is also expected that in 2015 the Northern Fleet probably will receive the second *Mistral*-class assault landing ships.[37]

Several recent developments, including the growing importance of the Arctic for the world economy, Russia's demands for an extension of its economic zone as far as the North Pole, and plans for the exploration of oil and gas resources in the North will translate into greater requirements for the Northern Fleet's capabilities. The fleet will need new submarines and surface ships, and the existing ships that have not been operational for many years (for a variety of reasons, including endless repairs) will have to be brought back into service.

Reform of the Northern Fleet

The Northern Fleet's 61st Marines Brigade has been downsized to become the 61st Marines Regiment[38] – but the regiment is manned to its full wartime strength. Another unit that has been brought up to "permanent combat readiness" status is the 536th Independent Coastal Missile Artillery Brigade.

The initial plan for the reform of the Northern Fleet's air strength was as follows. The 924th Independent Guard Naval Missile Aviation Regiment was to be disbanded. Its Tu-22M3 aircraft were to be transferred to the Long Range Aviation Command. Its Olenegorsk airfield was to become a fighter airbase of the 1st Air Force and Air Defense Command. The 279th Independent Shipborne Fighter Aviation Regiment was to retain its former status. The remaining air units were to be merged into two airbases. But those plans have been modified. The Northern Fleet's aviation has retained the Olenegorsk airbase. The new main Air Force and Air Defense airbase in the northwest of Russia is Besovets.

At present the Northern Fleet's air strength includes:

- 7050th Northern Fleet Airbase at the Severomorsk-1 airfield (consisting of the former 403rd Mixed Aviation Regiment, the 830th Helicopter Regiment and support units);
- 7051st Northern Fleet Airbase at the Kipelovo and Olenegorsk airfields (consisting of the former 924th Naval Missile Aviation Regiment and 73rd Anti-Submarine Squadron);
- 279th Independent Shipborned Fighter Aviation Regiment[39], which has retained its former status.

One of the priorities during the reform of the Northern Fleet's strength at sea was to downsize the auxiliary support units (i.e. former brigades have become divisions/detachments, and former divisions/detachments have become groups), or to disband them altogether. In a related development, service and maintenance of the fleet's naval nuclear propulsion units were outsourced to the Zvezdochka company in late 2009.[40]

The former 11th and 12th Submarine Squadrons have been merged into a single Northern Fleet Submarine Command, which consists of four submarine divisions (Diviziya). The 18th Submarine Division has been disbanded.[41]

The Northern Fleet itself has become part of the newly created Western Military District (Western Operational Strategic Command), along with the Baltic Fleet, the 1st Air Force and Air Defense Command, and the former Moscow and Leningrad Military Districts.[42]

At some point in the future the Northern Fleet will have a separate operational command for overseas operations, similar to the former squadron-level operational command. (Let us recall that the Northern Fleet's 7th Operational Squadron was disbanded in 2005). The command will be in control of the large ships operating in the far ocean zone. The Kola Flotilla will be transformed into the Barents Sea Operational Command. There will also be a separate command for special operations forces.

The composition of the White Sea Naval Base, due to the nature of its operations (i.e. construction, repair and testing of warships and submarines) has remained largely unchanged.

The Pacific Fleet

In 2008 the Pacific Fleet consisted of three large components: The United Northeastern Command (i.e. the command of the forces stationed in Kamchatka), the Primorskaya Combined Flotilla (forces stationed in the Vladivostok region) and the Sovetskaya Gavan naval district.

The United Northeastern Command included:

- 16th Submarine Squadron (consisting of the 10th and the 25th Nuclear Submarine Divisions and the 182nd Submarine Brigade);
- 114th Area Patrol Ships Brigade;
- 865th Fighter Aviation Regiment (MiG-31 interceptors);
- 317th Independent Mixed Aviation Regiment;
- 40th Independent Marines Brigade;
- 520th Independent Coastal Missile Artillery Brigade;
- 1532nd SAM Regiment.

The Primorskaya Combined Flotilla included:

- 36th Missile Ships Division;
- 44th Anti-Submarine Ships Brigade;
- 100th Landing Ships Brigade;
- 165th Surface Ships Brigade;
- 19th Submarine Brigade.

The Sovetkaya Gavan naval district included the single 38th Area Patrol Ships Division (i. e. detachment).

The coastal troops in the Maritime Territory consisted of the 55th Marines Division in Vladivostok and the 72nd Independent Costal Missile Regiment. The Pacific Fleet's air strength included the 568th Independent Guard Mixed Aviation Regiment (armed with the Tu-22M3, Tu-142M3 and Tu-142MR aircraft), the 289th Independent Anti-Submarine Aviation Regiment and the 73rd Independent Transport Aviation Squadron.

The Pacific Fleet's strength at sea includes five old Project 667BDR (Delta III) SSBN submarines built in the late 1970s. These subs represent Russia's strategic naval nuclear forces in the East. In September 2008 one of the five subs, *Ryazan*, made a voyage along the Northern Route as it was being transferred from the Northern Fleet to the Pacific Fleet. No such voyages had been made for over a decade. The current priority of the Pacific Fleet's procurement

program is to replace the Project 667BDR submarines with the latest Project 955 (Borey class) SSBN subs being built at the Sevmash shipyards. These subs will be armed with the new R-30 Bulava (SS-N-30) SLBM. The first sub in the Project 955 series, *Yuriy Dolgorukiy*, its currently undergoing trials. Two more subs are being built using modified Project 955 specifications.[43]

The Pacific Fleet's conventional strength at sea includes 12 Project 949A (Oscar II class) and Project 971 (Akula class) nuclear-powered submarines. It appears that the MoD has launched a program to restore the Pacific Fleet's SSGN and SSN subs. Several years ago *Omsk*, a Project 949A SSGN sub, underwent repairs at the Zvezda shipyards in Bolshoy Kamen. Another Project 949A sub, *Irkutsk,* was taken of service for repairs quite a while ago; it was followed by *Tomsk* in November 2008.[44]

Much less information is available about the repairs of the Project 971 nuclear-powered attack submarines. It is quite certain that the two subs of that type assigned to the Pacific Fleet will never be restored to combat duty. But there is every reason to believe that the reactor of one of these subs, *Kuzbass*, has recently been loaded with fresh nuclear fuel.[45]

There are 10 large surface ships assigned to the Pacific Fleet:

- *Admiral Lazarev*, a Project 11442 heavy nuclear-powered guided missile battlecruiser, commissioned in 1984 and taken out of active service a long time ago;
- *Varyag*, a Project 1164 guided missile cruiser, commissioned in 1990;
- four Project 956 fleet destroyers (*Bystryy*, *Burnyy*, *Boyevoy* and *Bezboyaznennyy);*
- four Project 1155 large anti-submarine ships (*Admiral Panteleev*, *Admiral Vinogradov*, *Marshal Shaposhnikov* and *Admiral Tributs).*

All four of the large anti-submarine ships, *Varyag* guided missile cruiser and *Bystryy* destroyer are in service with permanent combat readiness units. They regularly put to sea for training and combat duty. There have also been reports that *Admiral Lazarev*, a heavy nuclear-powered guided missile battlecruiser, could also return to combat duty. But unofficial sources claim that these plans are unlikely ever to come to fruition because the project would be too costly. Repairs of *Burnyy* destroyer began several years ago. It was reported that the other Project 956 destroyers would also be returned to service, but that does not look very likely.[46]

The Pacific Fleet has 10 Project 877 (Kilo class) diesel-electric submarines, four Project 775 and 1171 large tank landing ships, 16 guided missile light corvettes, eight anti-submarine corvettes, and about twenty assault landing craft and ocean, coastal and harbor minesweepers.

It seems likely that some of the Project 22350 (*Admiral Flota Sovetskogo Soyuza Gorshkov* class) frigates now being built will be assigned to the Pacific Fleet – but it is not clear when that might happen. Neither is it clear when *Sovershennyy*, a Project 20380 corvette now being built at the Amur Shipyards might be finished. Indeed, it is possible that the project has already been frozen. It has been announced, however, that the first of the *Mistral*-class assault landing ship the MoD has placed an order for will be assigned to the Pacific Fleet.[47]

The general military-political situation in Asia Pacific and the ongoing shift of the naval balance towards Asia require a strengthening of the Pacific Fleet by building new warships and especially by restoring the existing ones to combat readiness.

Plans to build new ships for the Pacific Fleet are being held back by the absence of any serious shipbuilding capability in Russia's Far East. The Amur Shipyard has nearly fallen apart; the others cannot build anything much larger than boats or small auxiliary ships. The government has launched a program to create a "super-shipyard" in Bolshoy Kamen. But for a variety of reasons, including the need to develop the region's economy, it would be better to resurrect one of the former Soviet Union's last mega-projects, the construction of a new shipyard in Sovetskaya Gavan.

Reform of the Pacific Fleet

The first step the MoD undertook as part of the reform of the Pacific Fleet was to optimize the structure of the fleet's coastal troops and to bring them up to their full nominal strength. The 40th Marines Brigade in Kamchatka (which was formed only as recently as 2007 from a motorised rifle brigade) was reformed into the 3rd Independent Marines Regiment.[48] The Russian Navy's only remaining marines division, the 55th, based in Vladivostok, has become the 155th Marines Brigade. In terms of its actual numbers the 155th Brigade is a more formidable force than the reduced-strength 55th Division was.[49] It has also received a large batch of the new BTR-80M armored personnel carriers and trucks.[50] The Pacific Fleet's 72nd Coastal Missile Regiment is likely to become the next unit to be armed with the new Bastion-P anti-ship missile system.[51] There have also been some restructuring in the fleet's coastal missile artillery units.

Under early reform plans for the Pacific Fleet's aviation and air defense units, the MoD was expected to merge the units stationed in Kamchatka into the 14th Aerospace Defense Brigade, which was to become part of the Russian Air Force and Air Defense. But those plans have not been put into effect, and the aforementioned units remain part of the United Northeastern Command, which is subordinated to the Pacific Fleet. The 865th Fighter Aviation Regiment has become part of the Pacific Fleet's new 7060th Airbase in Yelizovo[52]. The fleet's SAM and radar regiments have been merged into an aerospace defense brigade, similar to the one created in the Baltic Fleet.

Early plans also included the transfer of the Tu-22M3 long-range bombers assigned to the Pacific Fleet's 568th Independent Guard Mixed Aviation Regiment to the Long Range Aviation of the Russian Air Force and Air Defense. That has not happened either. Instead, the fleet's air strength has been merged into three airbases: the 7061st (Tu-22M3 and ASW aircraft) at the Kamennyy Ruchey[53] airfield, the 7062nd (ASW and transport aircraft) at the Nikolayevka airfield, and the already mentioned 7060th Airbase (combined) at the Yelizovo airfield on Kamchatka.[54] It is quite likely that at some point in the future the 7069th, the 7061st and the 7062nd Airbases will be merged into a single airbase.

In 2010 the MoD set up Submarine Commands at the Northern and the Pacific fleets. The new commands subsumed all the submarine formations at their respective fleets. But whereas the creation of the Submarine Command in the Northern Fleet has received some media coverage, there has been next to no information about the similar process in the Pacific Fleet.

It can be assumed that the 16th Submarine Squadron's command will become the core of the future Pacific Fleet Submarine Command. It can also be expected that this command will subsume the 19th Submarine Brigade stationed in Malyy Uliss bay (Vladivostok). The command of the Sovetskaya Gavan district is due to be disbanded in the summer of 2011.[55]

At present the Pacific Fleet is part of the newly created Eastern Military District (Eastern Operational Strategic Command), along with all the armed strength of the former Far-Eastern Military District, part of the strength of the former Siberian Military District, and the 3rd Air Force and Air Defense Command. Admiral K. Sidorenko, the former Commander of the Pacific Fleet, has been appointed the commander of the new military district, emphasizing the importance of the naval component in the Far East.[56]

The main organizational and structural reforms as part of the program to create the Eastern Military District were expected to be launched after December 1, 2010.

At present there is a large amount of construction and renovation going on in Vladivostok, which will host an APEC summit in September 2012. This has had some effects on the Pacific Fleet; almost all of its units have been, or are in the process of being relocated from Russkiy Island. There are also plans to move the fleet's HQ to Fokino, along with the surface ships now stationed in Vladivostok.[57]

By 2013 the Pacific Fleet will probably have the following composition:

- Submarine Operational Command;
- Overseas Operational Command;
- Northeastern Operational Command;
- Sea of Japan Operational Command;
- Special Operations Command;

- Coastal Troops Operational Command;
- Naval Aviation Command;
- Support and Logistics[58].

The Northern Fleet is likely to have a similar composition.

Naval shipbuilding during the reform

The year 2010 has been the most successful for the Russian Navy's shipbuilding program in a decade.

- In the autumn there were two successful test-launches of the new R-30 Bulava SLBM (launches No 13 and 14) after a string of failures. The Navy now has a reasonable amount of confidence that the Project 955 SSBN subs now being built will not have to be refitted to accommodate another missile. One of these subs, *Yuriy Dolgorukiy*, is already undergoing sea trials; two others, *Aleksandr Nevskiy* and *Vladimir Monomakh*, are being built at the Sevmash shipyards to modified Project 955 specifications. These submarines will replace the Pacific Fleet's aged Project 667BDR subs.
- On June 15, 2010, seventeen years after it was laid down at Sevmash, the first fourth-generation Project 885 nuclear-powered attack submarine, *Severodvinsk*, left the slip dock. Another boat, *Kazan*, was laid down at Sevmash in 2009; it is being built to modified Project 885 specifications.
- In October 2010 the first Project 22350 frigate, *Admiral Flota Sovetskogo Soyuza Gorshkov*, was launched at the Severnaya Verf shipyards after four years of construction. The second ship of this class, *Admiral Flota Kasatonov*, was laid down at Severnaya Verf in 2009. In 2011 MoD has ordered from Severnaya Verf four more Project 22350 frigates.
- Negotiations continued with France about the construction and licensing of *Mistral*-class helicopter-carrying assault landing ships. In early October 2010 the Russian MoD announced a contract for *Mistral*-class ships; the contract was widely expected to be awarded to France.[59] The new ships will take the Russian assault landing capability to a new level and arm the Russian Navy with the latest technology. Russia has a long history of buying ships abroad or using foreign technical assistance; that history goes back to Soviet and even Imperial times. As expected, on Juny 17, 2011 the Russia signed a contract with France for two *Mistral*-class ships to be built in France and delivered to the Russian Navy in 2014-2015.
- The hull of *Soobrazitelnyy*, the second ship to be built to (modified) Project 20380 specifications, was finished at Severnaya Verf shipyards in 2010; the ship is now preparing for pre-delivery trials. Two more Project 20380 corvettes are being built at Severnaya Verf. In 2011 MoD has

ordered Severnaya Verf eight more corvettes of the ugraded Project 20385 specifications.

- A Project 06363 diesel-electric sub (a modified version of the Project 877/ Kilo class), *Novorossiysk*, was laid down at the Admiralty Shipyards on August 20, 2010. After spending a lot of time and effort trying to sort out the teething problems with *St Petersburg*, the first sub of the new Project 677 (Lada class), the Russian Navy has abandoned the idea that all its new diesel-electric subs should be Project 677. It has decided instead to build a few more modified Project 877 boats, because this series has earned itself a good reputation over the years. It has been reported that the Navy wants to build six Project 06363 subs for the Black Sea Fleet; the contract for the first three has already been signed for delivery by 2014.[60]
- On May 8, 2010, after almost five years of trials, the first Project 677 (Lada class) diesel-electric submarine, *St Petersburg*, entered service with the Russian Navy. The sub, which was laid down at the Admiralty Shipyards back in 1997, will be serving "on a trial basis" – the practice was quite widespread in Soviet times.[61] Two more Project 677 submarines, *Kronstad*t and *Sevastopol*, are being built at the Admiralty Shipyards.
- *Vice-Admiral Kulakov*, a Project 1155 large anti-submarine ship, commissioned in 1981, has become operational after almost 20 years of mid-life repairs at the Kronstadt and Severnaya Verf shipyards. The news was nothing short of miraculous; there was very little hope left that *Vice-Admiral Kulakov* would ever return to service with the Russian Navy. There have also been unofficial reports suggesting that another Project 1155 ship, *Admiral Kharlamov*, will shortly arrive at the Severnaya Verf shipyards for mid-life repairs and upgrades.
- Any repairs or upgrade programs for the Project 971 and 949A nuclear-powered submarines would be classified. Nevertheless, analysis of the information available in the public domain suggests that these programs do exist and that they are actually being stepped up.
- The first Project 21631 guided missile light corvette, *Grad Sviyazhsk*, was laid down on August 27, 2010 in Zelenodolsk. A total of five such ships will be built.[62]
- *Zvezdochka*, a Project 20180 rescue and trials ship built by the eponymous Zvezdochka company, entered service with the Russian Navy on July 24, 2010 after successfully completing the state trials program.[63]
- The Russian Navy has announced a contract for the design of a new corvette to replace the Project 20380 class.[64]
- The Yantar shipyards has been awarded a contract to build a second Project 11711 large tank landing ship.[65] The first ship of this class, *Ivan Gren*, was laid down in 2004 and is still being built.

- In 2009-210 Yantar also laid down two large auxiliary ships for the Russian Navy: *Yantar*, a Project 22010 oceanographic ship, and *Seliger*, an Project 11982 trials ship.
- On December 18, 2010, Yantar laid down the first modified Project 11356M frigate, *Admiral Grigorovich*. There will be two more ships in this class, *Admiral Essen* and *Admiral Kolchak*. All three will be assigned to the Black Sea Fleet. *Admiral Grigorovich* will be completed in 2014. The second ship was expected to be laid down in the summer of 2011.[66]
- There have been reports that Ukraine was planning to hand over to Russia *Ukraina*, a unfinished guided missile cruiser, the fourth in the Project 1164 class. The hull of the ship, which was formerly known as *Admiral Flota Lobov*, was launched in 1990. Negotiations about the possibility of finishing the ship at one of the Russian shipyards ended after Russia said it was not prepared to pay any money for the hull – but would agree to take it free of charge.[67]

In addition to the aforementioned large ships, several small ones entered service with the Russian Navy in 2010, including *Ataman Platov*, a Project 21820 assault landing craft, *VTR-79*, a Project 20360 missiles transport, and several tug boats.

Several ships and submarines were delivered by the Russian defense contractors to foreign customers. That has given the Russian Navy some training opportunities: under the existing practice, the ships built for foreign customers first become part of the Russian Navy, where they are tested by Russian crews.

In naval aviation, the following procurement programs are now under way:

- Starting from about 2012 the Russian Navy will receive 26 new carrier-based MiG-29K/KUB fighters.
- A repair and upgrade program for the Tu-142M and Tu-142MR aircraft is now under way.
- Another ongoing program is to upgrade the existing Il-38 ASW aircraft to the Il-38N specification and fit them with the Novella search and targeting system. The specific details of the project are not clear – but it has been announced that at least some of the upgraded aircraft will be assigned to the Black Sea Fleet.
- The Navy is also expected to receive upgraded Su-24M attack aircraft.
- The Air Force has announced a program to upgrade its Tu-95MS and Tu-22M3 bombers – but it is not clear whether the Tu-22M3 operated by the Navy will be upgraded as well. That would be very desirable, given that these aircraft are not very old.[68]

- The MoD continued its program to train carrier-based aviation pilots; last year the program was expanded to include young pilots as well.

In an especially important development, the MoD has set up the new 859th Naval Aviation Training Center in Yeysk. The new center has subsumed the former 859th Training Center, the 444th Combat Training Center and the Yeysk Pilot Training School. The MoD has also launched a program to build a ground simulator of a carrier deck in Yeysk, similar to the NITKA carrier deck simulator in the Crimea. It is also building the requisite social infrastructure for the naval aviation base in the city. The total cost of the new facilities in Yeysk is estimated at 24bn roubles over the 10-year period until 2020.[69] The first stage of the program will cost 8bn roubles. It will include the construction of take-off and landing blocks with airfield facilities, as well as housing and infrastructure for the servicemen. The second stage, costing 16bn roubles, will see the construction of testing facilities, including carrier deck catapults for initial acceleration during take-off.[70]

In late 2009-2010 the Navy's coastal troops took first deliveries of the Bastion-P, the new mobile coastal anti-ship missile system. But the prospects for the entry into service of the Bal mobile coastal anti-ship missile system and for receiving additional Bereg 130mm mobile coastal artillery systems remain unclear.

Based on all of the above, the following conclusions can be made.

The Russian Navy is undergoing the most serious transformation and restructuring in the past 20 years. The final shape of the Navy after the reform, along with all the advantages and disadvantages of the decisions being made now, will become clear in the next few years. One of the key changes is the creation of the new Operational Strategic Commands, which will control all the Russian armed strength in their respective territories, with the exception of the Strategic Missile Troops and the High Command's reserve forces. That change seems entirely justified. It will make for a better command and control system, facilitate horizontal coordination, improve combat readiness and reduce the size of the command structures in the Russian Armed Forces.

The ongoing reform of the Russian Navy and of the Russian Armed Forces in general has drawn a torrent of criticism from the people directly affected by that reform and from a number of commentators. The position of the former is understandable; reforms are always painful. But the latter seem to forget that the Armed Forces are not set in stone. They must change in line with the changing requirements of our time.

The important fact that has somehow receded into the background amid all the controversy is that after long years of mostly sitting at their bases, the Russian warships are once again flying the flag all across the globe. Their long sea voyages have become a common occurrence in the past few years. Many of

these expeditions, such as the ones undertaken in 2010 by *Petr Velikiy* heavy nuclear-powered guided missile battlecruiser and *Moskva* guided missile cruiser, are unique even by the standards of the "Golden Age" of the Soviet Navy under Admiral Gorshkov in the 1970s and 1980s.

The government is now working on the new State Armament Program for 2011-2020 (the GPV-2020 program). It was announced in late 2010 that some 20.7 trillion roubles will be spent on the program across the Armed Forces by 2020, including the 4.7 trillion to be spent on Navy procurement programs.[71]

The precise number of the new ships and boats to be built for the Russian Navy has not been made public, and the program will almost certainly undergo several revisions. But we must not forget one thing: when the Russian Empire embarked on a large shipbuilding program to rebuild its Navy after the war with Japan a century ago, the first thing it did was to build new shipyards and to upgrade the ones that already existed.

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Russian Military Doctrine and the State of its Armed Forces. Theories and Reality

Anton Karnaukhov, Vyacheslav Tseluiko

There's no need to explain why a successful military reform must be based on a clear plan, which includes a whole range of various papers and documents. The first group of these documents includes concepts, strategies and doctrines. These are fundamental papers that outline the development of national defense capability over a long time frame. The second group includes laws, decrees and resolutions that put into practice the strategies outlined in the first group. The fundamental defense paper we would like to focus on in this article is the Military Doctrine[1] enacted by a presidential decree on February 5, 2010. The doctrine includes: key definitions; a list of dangers and threats faced by the Russian Federation; a section on the nature of modern conflicts; a list of Russian defense policy objectives; the objectives of the Russian Armed Forces in peacetime and wartime; development strategy for the Russian Armed Forces; and military-economic underpinnings of national defense capability, including defense industry strategy and defense cooperation with other countries.

Before discussing how the Military Doctrine sits with the current state of affairs in the Russian army and with realistic projections, one thing needs to be made clear. The beginning of the latest round of the Russian military reform dates back to

2008, or maybe to even earlier years, when plans were being drawn for changes that only came to light after the war with Georgia. But one of the key papers underlying that reform, the Military Doctrine, was approved only in early 2010, which seems to defy logic. It cannot be ruled out that the authors of the document had shaped it in line with the lower-level reforms already being implemented. But there is also the possibility that they were not led by those reforms in any way. That raises the question of whether the doctrine was thought out very well, and whether it contradicts some of the transformations already implemented.

Conventional forces

The Russian Military Doctrine makes a distinction between four levels of military conflicts: an armed conflict, a local war, a regional war and a large-scale war (Article 6, Paragraphs д–з). According to the authors of the doctrine, the two lower levels of military conflict pursue limited goals, while the two upper levels pursue significant and radical military-political goals. The doctrine says that nuclear weapons can be used along with conventional ones in the event of a regional or large-scale war. Article 22 states that the Russian Federation reserves the right to use nuclear weapons in response to nuclear weapons being used against Russia itself and/or its allies, as well as in response to a conventional attack against Russia that jeopardizes the very existence of the Russian state. Essentially, nuclear weapons are viewed in the doctrine as an instrument of deterring nuclear conflicts as well as regional or large-scale wars (Article 16). Whether or not Russia's Strategic Nuclear Forces are up to the tasks laid upon them by the Military Doctrine will be discussed later on. For now let us just say that we question the logic of using nuclear weapons in a non-nuclear regional or large scale war between two nuclear-weapon states. Such a move could well escalate the conflict into a full-blown nuclear war (Article 16), and the cost to both sides could then turn out to be much higher than the cost of defeat early on, during the conventional phase of the conflict. Therefore the usefulness of the Russian nuclear arsenal in a conventional conflict with countries such as the United States or China is a moot point.

Article 7 of the doctrine states that the likelihood of a large-scale war being waged against Russia has diminished, but there are growing threats of other natures. The task of defending against a wide range of threats, both during the pre-conflict period (deterring aggression) and during combat action, falls to the Conventional Forces (CF). It is these forces that will play the leading role in armed conflicts or local wars, as well as in deterring the potential aggressor from starting them in the first place. The role of CF in preventing local conflicts from spiraling into regional or large-scale wars, as well as their usefulness during the regional or large-scale wars themselves, depends on the specific circumstances. In our opinion, the key role here belongs to nuclear forces, which remain the instrument of last resort – especially in large-scale conflicts, due to the superior-

ity of Russia's potential adversaries in conventional forces.[2] In regional wars with a rational adversary (especially if that adversary has nuclear weapons), the role of the Russian strategic and tactical nuclear arsenal would be less important.

Before we assess the adequacy of the Russian Armed Forces in modern conflicts, let us discuss how the Military Doctrine views these conflicts (Articles 12-16). One of their most distinct features is that they break out unpredictably and leave very little time to prepare for combat action (Article 12, Paragraph д; Article 13, Paragraph а). That means a much shorter threat period and much higher requirements to combat-readiness and mobility.

Since local war is the highest level of conflict in which CF are still supposed to play the leading role, it is the ability of conventional forces to achieve their objectives in local conflicts that is the most useful indicator of their adequacy. In the near time frame the Russian armed forces will retain their superiority in numbers and, so some extent, their fighting ability over the armies of most neighboring states[3]. The two big exceptions are the United States and, with certain provisions, China – but a local war with either is unlikely because it would almost certainly escalate to a large-scale nuclear war. The situation is much less optimistic for Russia if we compare its armed strength in each individual part of the country as opposed to the overall numbers. The Russian forces are scattered all across the country's vast territory and several foreign bases. As a result, in each individual theater Russia is not that strong. That is why the ability to bring forces from across Russia to the theater of conflict is paramount, as demonstrated by the two Chechen wars[4] and the Five Day War with Georgia.[5] In both cases Moscow had to bring in reinforcements from several Military Districts, even through the adversary was relatively weak. In any potential conflict with countries such as Turkey or Japan such redeployments will be even more important. Here, Russia has many strengths, as well as a number of weaknesses.

One of the undoubted strengths is the large fleet of military transport aviation[6], a sizeable civil aviation fleet and an extensive, albeit patchy, network of airfields. These can be used to airlift troops, hardware and supplies, provided that Russia has air superiority. To achieve air superiority, large numbers of aircraft need to be moved quickly to the theater. That in itself is not difficult, since planes fly far and fast. Nevertheless, in order to make airlifts more effective, the main Russian airbases need to have large reserves of ammunition, fuel and supplies to sustain combat action until the reinforcements arrive. The support and logistics units of the Air Force will need the capacity to support not just their own local squadrons but the reinforcements as well. Redeployment of frontline aviation between the Western and Asian parts of Russia will require large fuel reserves at staging airfields and/or a fleet of aerial refueling tankers. Combat aircraft will need to be equipped for aerial refueling, and their pilots will have to be given the necessary training.

Airlifting ground troops along with all their armor and equipment requires many air transports and a lot of time. The better solution is to airlift only the soldiers and store all the equipment locally at the Arms and Equipment Storage Depots (BKhVT). That is the path the Russian Army has chosen. One serious drawback, however, is that the weaponry used by the deployed brigades at their home bases is often very different from that stored at the depots. As a result, some soldiers will receive weapons they have been trained for, while others will have to learn on the hoof. Modern conflicts leave very little time or opportunity for such learning. Giving the soldiers training in several types of weaponry they may have to use is not practical; that would be too costly, and besides, conscripts don't spend long enough in the armed forces. A more feasible solution would be to set up special BKhVT storing weapons and hardware identical to that used by the deployed brigades. But at present the Russian armed forces do not have enough modern hardware even for the deployed brigades themselves, let alone the depots. The "spare" BKhVT can therefore be set up only for those brigades that are armed with relatively outdated weaponry. The ones that have received the latest weapons will have to be airlifted or brought by rail along with all their equipment.

The problems that hinder troop redeployments across Russia include weak and vulnerable ground communications between the European and Asian parts of Russia, as well as in the Caucasus; the disjointed nature of the Russian Navy, which consists of several far-flung fleets; and the generally low combat-readiness of the Russian army, which still relies on large numbers of conscripts serving for short periods of time. That latter circumstance means that a "permanent combat readiness brigade" can actually send only a couple of battalion-size tactical groups (BTG) to the combat theater. Furthermore, if that deployment becomes necessary shortly after the arrival of a fresh batch of conscripts, these two BTGs will be poorly trained to boot. That is why to ensure freedom of maneuver, each military district must have a certain number of brigades manned by professional soldiers. A quick fix would be for half the brigades to accept only the conscripts recruited during the spring draft, and the other half to take up the autumn conscripts. That way at any given time half of the Russian brigades will be manned by relatively seasoned conscripts, although the other half will be little more than training units. An alternative solution would be to increase the duration of the draft.

Apart from mobility, another important factor that determines an army's fighting ability is technology. Articles 12-15 of the Military Doctrine focus on the role of the latest technology in modern conflicts. Russia had inherited a lot of Soviet hardware, which was still relatively modern when the Soviet Union fell. Most of that weaponry has become obsolete by now. Rearmament of the Russian Armed Forces is therefore one of the top priorities of the ongoing re-

form. But a combination of grand scale and limited funds means that some branches of the armed services have to be prioritized over others. Nevertheless, when we say that Russia is lagging behind in military technology, it is important to define the terms of reference. The technology gap between Russia and the United States or the leading NATO powers is quite obvious. But compared to the armies of China, Turkey or the CIS nations, the Russian army does not look bad at all. For the next few years at least, in the event of a conflict with many of Russia's potential adversaries its army will be entirely adequate in terms of technology.

Strategic Nuclear Forces

In contrast to the Russian conventional forces, the objective set by the Military Doctrine before the Strategic Nuclear Forces can be formulated in only two words: be prepared. Russia reserves the right to use nuclear weapons in response to weapons of mass destruction being used against it, or in response to a conventional attack that jeopardizes the very existence of the Russian state (Article 22). Based on that notion, the Strategic Nuclear Forces must always be ready to give the government a timely warning of an impending attack against Russia, and to inflict a guaranteed level of damage to the adversary (Article 16; Article 19, Paragraph в; Article 27, Paragraphs в–г; Article 28, Paragraph б).

That task requires the Strategic Nuclear Forces to maintain a certain minimum quantity and capability of nuclear weapons, as well as adequate early-warning and command-and-control systems. According to open-source information, as of July 2010 the Russian SNF had 605 strategic delivery vehicles capable of carrying up to 2,676 nuclear warheads.[7],[8]

The strategic weapons currently operated by the Russian Strategic Missile Troops include silo-based missiles – R-36MUTTKh (SS-18 Mod 4) and R-36M2 (SS-18 Mod 5/6), UR-100NUTTKh (SS-19 Mod 3) and Topol-M (SS-27) – and mobile ground-based missile systems – Topol (SS-25), Topol-M (SS-27) and RS-24 Yars (SS-29) – a total of 369 missile systems capable of carrying 1,247 warheads.

One major concern is that the R-36 and the UR-100NUTTKh missiles are fast approaching the end of their lives. Old missiles are being decommissioned faster than new ones are being built to replace them. Questions are also being raised about the resilience of mobile missile launchers compared to protected silo-based versions, and the ability of missiles armed with a single warhead to penetrate the future missile defense systems. At present the ability of the Russian SNF to achieve their objectives is not in doubt. But at some point in the future, that may well change.

For all the concerns listed above, the ground-based component of the Russian nuclear triad continues to play the leading role in ensuring Russia's

resilience to retaliatory and launch-under-attack strike. That component also has the largest number of nuclear warheads.

The Russian Navy operates 10 nuclear-powered strategic ballistic missile submarines (SSBN); the SLBMs they carry can deliver 576 nuclear warheads. The Project 941U (Typhoon class) *Dmitry Donskoy* submarine is currently testing a new missile system based on the R-30 Bulava (SS-N-30) missile. The system will eventually be installed on the new Project 955 (Borey class) *Yuriy Dolgorukiy* submarine, which was launched in 2008, and three other subs of the modified Project 955 design now being built.

The resilience of the naval component of the Russian SNF depends on the actual missile carriers and on the support components, such as surface ships, aviation, hydroacoustic reconnaissance, coastal infrastructure, etc. There is a clear problem with the combat resilience of the naval component of the triad. A huge chunk of the Navy's limited resources is being ploughed into the construction of new missile subs, starving the rest of the Navy. That has resulted in falling numbers of the combat-ready ships on which the combat resilience of the missile subs depends. Besides, even in the best of times the Russian Navy was unable to keep more than 15 per cent of its missile subs at sea (compared to the US Navy's figure of over 50 per cent). These submarines are easy prey when they sit at their bases.[9] There are also numerous questions about the reliability and resilience to eavesdropping of the command-and-control system which runs the missile subs when they are at sea on combat duty.

Meanwhile, the R-29R (SS-N-18) and the R-29RM (SS-N-23) SLBMs carried by Project 667BDR/BDRM (Delta III/IV classes) submarines are approaching the end of their lives. In the coming years the core of the naval component of the SNF will be made of Project 667BDRM (Delta IV class) submarines armed with the R-29RMU2 Sineva (SS-N-23 Mod) missiles and Project 955 subs with several versions of the R-30 Bulava missile. That should give Russia's naval nuclear forces a very formidable deterrence capability – provided that the Bulava missile successfully passes all the tests and that the conventional naval forces, on which the nuclear missile subs depend, receive the attention they require.

The strategic aviation component consists of the Tu-160 and Tu-95MS heavy bombers armed with several versions of the Kh-55 (AS-15) strategic cruise missile. A new cruise missile is now in development. All the Russian Tu-160 bombers (16 units) and some of the Tu-95MS aircraft (about 20) are based in Engels (Saratov Region). Another 40 or so of the Tu-95MS bombers are based in Ukrainka (Khabarovsk Territory).[10]

The combat resilience of the aviation component of the nuclear triad is also questionable. Of course, it is more difficult to hit a bomber in mid-flight than a missile in a silo or a missile sub sitting at its home base. But continuous patrols

of strategic aviation have resumed only very recently, and only a small part of the fleet is in the air at any given time. Of course, more bombers can be kept in the air if there is a long enough threat period. But the bomber crews need regular practice for scenarios involving aerial refueling tankers, AWACS and radioelectronic warfare planes – and that practice is now in short supply. That is why the aviation component of the nuclear triad is better suited for a preventive rather than retaliatory strike.

The task of providing strategic defense capability falls to Russia's Space Troops, which include the missile defense system, the missile attack warning system, and the space monitoring system.[11]

The missile attack warning system operates a network of satellites which can detect ballistic missile launches from US territory, as well as long-range radars. But Russia has no capability to keep the entire US territory under constant surveillance, and it does not monitor the areas at sea from which naval-based ballistic missiles can be launched. In addition, some of the long-range radars on which the missile attack warning system relies are located on foreign territory.

Nevertheless, the MoD continues to add new missile attack warning stations and to launch new surveillance satellites.

At present, Russia's Strategic Nuclear Forces are adequate to the task laid upon them. But many of their missiles, warning stations and command and control systems are reaching the end of their life spans. That problem requires urgent resolution. Some good news came on October 28-29, 2010, when Russia successfully test-launched several naval and ground based ballistic missiles, demonstrating the reliability of the existing arsenal of the R-29R, Sineva and Topol missiles, and showing that the team working on the new Bulava SLBM is making progress.

Mobilization

Articles 12 and 14 of the Military Doctrine emphasize that modern conflicts tend to unfold very rapidly. Russia therefore needs most of the units in its army always to remain ready for action. Any reduced-strength formations, let alone the arms and equipment storage depots, would simply take too long to bring their strength up to its full war-time level before they can join the action. In essence, the authors of the doctrine have thereby justified the steps that have already been taken as part of the reform. The old mobilization structure was more in line with the requirements of a regional or large-scale war.

On the one hand, that logic has merit, as demonstrated by the war with Georgia. The active phase of the war lasted for only five days, which is far too short a time to announce mobilization, bring the reduced-strength formations up to their full wartime levels, give them some basic organizational training to that they could work as a team, and bring them to the theater of conflict. But in our

view the new doctrine misses an important point. It is true that the active phase of modern conflicts can be over in a matter of days. But post-conflict settlement often takes years, if not decades. The sides taking part in the conflict therefore have to maintain large forces near the conflict zone for a very long time. A case in point is Chechnya, where the active phase of the campaign was over almost ten years ago, and where most of the fighting with the rebels is now being done by the Interior Ministry and the FSB. Nevertheless, the Russian Armed Forces have to keep 10 per cent of their motorized rifle units in Chechnya, plus significant troop numbers in neighboring parts of Russia. Another illustration is the conflict with Georgia. After the short war in August 2008 Russia then had to deploy two military bases on the territory of the former Georgian autonomies. More troops have been stationed in Russia itself across the border from Abkhazia and South Ossetia in case they are needed as reinforcements.[12]

There is a real danger that a large part of the full-strength units of the Russian army will always be committed to long-term conflict settlement in Russia itself and abroad. The country's ability to keep large numbers of units at their full strength during peacetime is limited. As a result, any new conflict might require large troop numbers to be redeployed from other regions, thereby weakening Russia's armed strength in those regions below the acceptable level. In such a scenario, mobilization will play a much more important role because it will enable the MoD to restore its armed strength in the "donor" regions. But the current structure of the Russian army is not quite adequate to that task, as it no longer includes reduced or skeleton-strength units. It still has the BKhVTs, but these require a very long time to transform themselves into full-strength combat units, as they lack not only privates and sergeants but officers too. Belarus has already tried the BKhVT idea, and found it ineffective. The Belarusian MoD has now turned these depots into reduced-strength formations, with a complement of commanding officers and about a third of the constituent units being maintained at their full strength.[13]

All that being said, the latest Military Doctrine still dwells on mobilization plans at some length (Article 28, Paragraph а; Article 30 Paragraph ж; Article 31 Paragraphs б–в; Article 33 Paragraphs б–в; Article 34 Paragraphs е, к), so the concept has not been completely abandoned. But in practice, mobilization is possible on a fairly limited scale these days. The reasons for that include the relatively small number of BKhVT; the shortage of junior officers who can be assigned to the newly-deployed units; and the age and obsolescence of the weaponry stored at the BKhVT. All these factors limit the scale of mobilization, even though the existing conscription system continues to produces large numbers of trained reserve soldiers every year.

It is therefore safe to conclude that the current structure of the Russian army is not fully adequate to the task of effective mobilization.

Coalition armed forces

The sections of the doctrine that detail the military dangers (Article 8, Paragraphs и–л) and military threats (Article 10, Paragraph в) specify which of those dangers and threats are especially pressing for Russia's allies in Central Asia, i.e. members of the Collective Security Treaty Organization (CSTO). The tasks set out in the doctrine in connection with those dangers (Article 19, Paragraph д; Article 21, Article 24) have been laid upon the Collective Rapid Deployment Force (CRDF) and the Collective Rapid Reaction Force (CRRF), which include Russian and CSTO troops.

Before discussing whether the Russian component of the CRDF and CRRF is adequate to the task, let us establish that the main area of responsibility of those forces is Central Asia. The region has three main types of terrain: plains (steppes, deserts, semideserts), hills and mountains (including high peaks), and urban areas. Armenia, which lies in the Caucasus but is a member of both the CSTO and the CRRF, also has mountainous terrain. The Russian troops serving as part of the CRDF and CRRF must therefore be competent in those three types of terrain. Other complicating factors to consider include the remoteness from the Russian mainland, poor roads, and the vacillating position of Uzbekistan. All of that means that the Russian troops serving in the CRDF and the CRRF are very reliant on the strategic airlifting capability provided by the Military Transport Aviation branch of the Air Force and on tactical airlifting provided by Army Aviation.

The Airborne Troops are the branch of the Russian Armed Forces that has the greatest mobility; its weaponry and equipment are selected with strategic airlifting requirements in mind. It is therefore the branch that makes up the bulk of the Russian CRRF troops, including the 98th Guard Airborne Division and the 31st Guard Airborne Assault Brigade.[14] But neither of the two units is quite adequate for the Central Asian theater in terms of their structure or weaponry.

To begin with, most of the armor and trucks in service with the Airborne Troops are not suitable for airlifting by the Mi-8 helicopters, the Russian Army's main air transport. The heavy Mi-26 transports are more capable, but Army Aviation has very few of them.

Second, most of the airborne combat vehicles currently in service (BMD-1 and BMD-2) are obsolete and have a number of very serious shortcomings that limit their usefulness in Central Asia's mountainous and desert terrain. That was the reason why the BMD-1 and BMD-2 vehicles that served with the Soviet forces in Afghanistan had to be replaced with the more adequate BMP-2D upgraded armoured infantry fighting vehicles. The obsolete BMD vehicles also proved of limited utility in urban warfare during the street battles in Grozny in 1994-1995.

Third, the nature of warfare in mountainous and desert terrain requires special training and outfitting.

Fourth, due to the huge size of the potential theater of combat action, the CRRF needs greater reconnaissance, logistics and technical capability.

In our view, the 98th Guard Airborne Division and the 31st Guard Airborne Assault Brigade need a greater degree of specialization in order to be effective in Central Asia. That includes:

- Higher numerical strength and better equipment;
- Specializing individual CRRF units for combat action in various types of terrain, i.e. mountains, plains, and city streets, by giving them specialized training and equipment;
- Replacing the existing armor with wheeled buggy or jeep-type fighting and transport vehicles, which are more suited for action in desert terrain, as well as for airlifting by the Mi-8 helicopters;
- Some of the units should be equipped with the more advanced BMD-4, BMD-4M or BMP-3 vehicles, which offer greater protection from rocket-propelled grenades and can be used to support more lightly armed formations in various situations, including urban scenarios;
- The units fighting against insurgents should be equipped with specialized MRAP-type (Mine Resistant Ambush Protected) vehicles; and
- Some of the artillery units should be equipped with light towable systems which can be airlifted by helicopters, for coordinated action with wheeled armor and trucks.

All these measures would substantially improve the effectiveness of the Russian CRRF component.

It must also be kept in mind that in modern conflicts soldiers often have to perform policing functions in addition to their traditional tasks. Events in Osh and Jalalabad in Kyrgyzstan in the summer of 2010 have demonstrated the need for specialized police units in the CRRF. Such units could be transferred to the CRRF command from the Russian Interior Ministry or created as part of the MoD’s Military Police.

The Russian Navy’s tasks and capabilities in the World Ocean

The Russian Military Doctrine sets out the following tasks for the Navy: providing the resilience of the naval component of the Strategic Nuclear Forces (Article 27, Paragraph в); providing security for Russia’s economic activities in the World Ocean (Article 27, Paragraph н), and combating piracy (Article 27, Paragraph м).

The task of providing security for Russia's economic activities consists of two components. The first is the Russian Navy's presence in the adjacent waters (which is also necessary to support the naval Strategic Nuclear Forces). Global competition

between the leading powers for access to raw materials and energy resources continues to increase. Some of Russia's explored reserves of oil and gas are situated in continental shelf areas. The areas disputed by foreign countries, including the Barents Sea shelf and territories in the Far East, are all in adjacent waters.

The second component is providing security to Russian citizens and/or supporting the interests of Russian companies, which includes the task of combating piracy and securing the shipping lanes.

In most cases these tasks boil down to "flying the flag" and maintaining the presence of one or two warships and a handful of support ships in the area. It is possible that at some point in the future protecting the interests of a large Russian company will require the intervention of a large naval or assault-landing force.

In order to be adequate to these tasks, the Russian Navy needs to have several types of multirole ships equipped with automated control systems that provide integration on the scale of a single ship or a group of ships.

Apart from the ships, another important asset is naval bases, which become especially important if the Russian Navy forces have to conduct lengthy operations far away from home. Russian ships are playing a major role in the operation to combat piracy off the Somali coast – but in order to get there they have to cover very large distances from their home bases in the north, the Baltic Sea and in the Pacific. As a result, that leaves the Russian ships less time to patrol the area before they have to return to their bases, puts additional strain on the Navy's resources and makes it difficult to conduct urgent repairs. That is why we believe that Russia needs naval base stations in the areas of Russian interests if the country's Navy is to fulfill the mission laid upon it by the latest Military Doctrine. Another urgent priority is to replace the Black Sea Fleet's aged ships with new ones, so that it could take part in various international operations in the Mediterranean and in the western Indian Ocean.

The ongoing campaign against piracy has demonstrated that the chosen tactic of using warships to patrol the dangerous waters and protect convoys of merchant ships is not very effective, and quite expensive to boot. A more radical solution would involve operations against the pirates' home bases or stringent checks of every single ship plying the waters off the Somali coast. The available frigates and destroyers would not be sufficient to mount such an operation. It could rely instead on universal assault landing ships, which can land assault squads during operations against the pirates' bases, provide air support, and control shipping. Such ships can carry multiple helicopters and high-speed landing boats, as well as a large force of marines, sufficient to deploy several patrol units equipped with helicopters or high-speed boats. In addition to combating piracy, the assault landing ships could become the core of expeditionary forces during operations to protect Russian interests (including the interests of large Russian companies) in various far-flung and

not very technically advanced parts of the world. The flexibility of such ships and the advanced communications and control equipment they carry makes it possible to use them as command ships. It is probably these very considerations that have led the Russia to announce a contract for the supply and production under license of a series of *Mistral*-class assault landing ships

Meanwhile, the Military Doctrine assigns a single peacetime task to the submarines that do not carry strategic nuclear weapons: they are supposed to provide resilience of the naval component of the Strategic Nuclear Forces. Nevertheless, the Falklands Conflict between the UK and Argentina has amply demonstrated the uses of nuclear-powered attack submarines against an adversary which does not have such submarines or effective anti-submarine defenses.

To summarize, it is safe to say that for now the Russian Navy remains adequate to the fairly limited tasks laid upon it by the latest Military Doctrine. But in order to retain that capability it needs an extensive fleet refresh program to replace its obsolete and ageing ships with advanced new designs, and a serious effort to maintain and restore the support infrastructure.

Conclusions

- Following the latest round of military reform, the Russian conventional forces are not entirely adequate to the tasks set out in the Military Doctrine. These forces are not large enough to be very effective in local wars. They are facing a shortage of trained soldiers and advanced new weaponry. Their capability rapidly to deploy over large distances is limited. In the event of a regional or large-scale war these inadequacies will be even deeper, thereby increasing Russia's reliance on its nuclear forces.
- Russia's Strategic Nuclear Forces are, on the whole, adequate to the tasks laid upon them, and will remain so for the foreseeable future – provided that there is sufficient financing for rearmament programs, especially for the Space Troops, the Strategic Missile Troops and the Naval Strategic Nuclear Forces. The priorities here include the procurement of the RS-24 Yars mobile ICBMs and of the Project 955 SSBN submarines armed with the new Bulava SLBM. Despite the falling size of the Russian strategic missile arsenal and the advances being made by the American missile defense system, it is safe to say that in the near time frame the Russian Strategic Nuclear Forces will retain the capability of inflicting unacceptable damage on any potential aggressor. Once the teething problems with the new Bulava SLBM are resolved and the missile enters mass production, the number of deployed nuclear warheads in the naval component will increase, as will that component's relative weight in the nuclear triad. It is therefore important to increase the capability of the naval forces which support the nuclear missile submarines.

- Mobilization issues are covered in sufficient detail in the latest Russian Military Doctrine – but the post-reform Russian army itself has a fairly limited mobilization capability. The reasons for that include the relatively small number of arms and equipment storage bases left in the Russian Armed Forces. Transforming these bases into active combat units will be difficult and very time-consuming. The existing mobilization system is therefore only partly adequate to the requirements of the Military Doctrine.
- The doctrine adequately covers the collective security system and the coalition forces led by the Russian Federation, including the Collective Rapid Deployment Force (CRDF) and the Collective Rapid Reaction Force (CRRF). But these two forces are in an embryonic state at this stage, and their Russian component needs a lot of work before it becomes fully adequate to the tasks and challenges it may face in the Central Asian states. Both the CRDF and the CRRF require a radical reform if they are to become effective.
- The Russian Navy is, on the whole, capable of fulfilling the limited mission set out for it in the Military Doctrine. To become more effective and capable, it needs a different set of ships operating in the far-flung parts of the globe to protect Russia's interests and to take part in the international operation against piracy. It also needs more base stations in foreign countries.

The Russian Armed Forces are at the very beginning of the road towards the numerical strength, structure and capability that would be adequate to the objectives set out in the Military Doctrine. But the reform needs to take a steady direction, without frequent and radical twists and turns; it needs to proceed in accordance with the fundamental documents – and the Military Doctrine is one of them.

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The Authors

Mikhail Barabanov. Graduated from the Moscow National University of Culture, then worked for the Moscow City Government. An expert on naval history and armaments. Science editor of the Eksport Vooruzheniy (Arms Exports) magazine since May 2004. CAST researcher and Editor-in-Chief of the Moscow Defense Brief magazine since 2008.

Dmitry Boltenkov – graduated from the Rostov State University. Naval historian and independent analyst. Author of a soon to be published treatise on the history of Russian and Soviet naval aviation.

Aleksey Gayday – officer of the Russian Armed Forces reserve. Graduated from the Russian MoD's Military University. Served in the Army; took part in combat action in Chechnya. Retired from the Russian Armed Forces as a result of the 2009 reform and restructuring. Independent military analyst specializing in the development and reform of the armed forces.

Anton Karnaukhov – graduated from the Kharkiv Karazin National University (Ukraine). Specializes in nuclear physics and security. Independent analyst on military aviation and the navy.

Anton Lavrov. Graduated from the Tver State Technical University. An independent military analyst and one of the most prominent independent Russian researchers of the 2008 Russian-Georgian War.

Vyacheslav Tseluiko. Graduated from the Physics and Technology faculty of the Kharkiv Karazin National University (Ukraine), where he is now a Research Associate at the Political Science department. Specializes in non-governmental armed formations and regular armed forces of the former Soviet republics. In 2008 defended a PhD thesis on "Destatization of the military sphere by non-governmental armed formations in the modern world".

About CAST

The Center for Analysis of Strategies and Technology was founded in 1997. It is a private research center specializing in the restructuring of Russia's defense industry, the national arms procurement program and the Russian arms trade. CAST is also involved in studies of the Russian army reform and armed conflicts in the former Soviet republics. The center publishes the Eksport Vooruzheniy (Arms Exports) magazine in Russian and Moscow Defense Brief in English.

Dmitry Boltenkov, Aleksey Gayday,
Anton Karnaukhov, Anton Lavrov, Vyacheslav Tseluiko

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